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ABSTRACT

This report contains 44 tables and 23 figures, along with narrative summaries, that provide an overall view of the farm sector in the United States in 1986. Some of the findings highlighted in the report are the following: (1) farmers spent less to produce their crops and livestock in 1986; (2) government payments to farmers increased, but prices for their commodities dropped; (3) farmers' net cash income rose 10 percent to a record $52 billion, and net farm income climbed 17 percent; and (4) income from nonfarm sources remained important to some farm households, generating $44.7 billion, up 5 percent from 1985. The report includes forecasts of 1987 income and balance sheet data. Results of an analysis based on survey data describe some possible short-term effects of tax code changes on tax liabilities of farm operators. (Author/KC)

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United States Department of Agriculture

Economic Research Service

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Economic Indicators of the Farm Sector

Farm Sector Review, 1986

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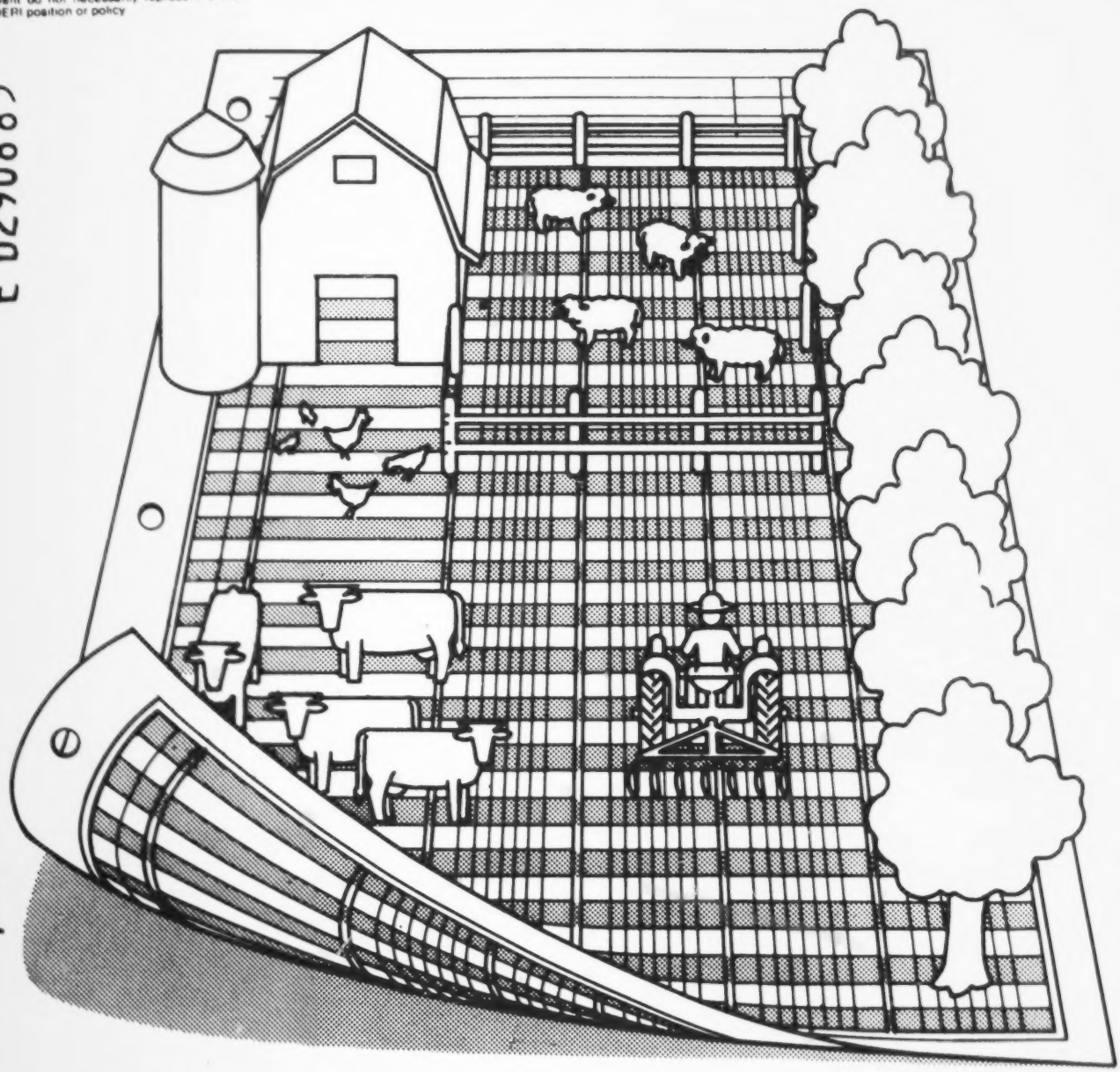

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ABSTRACT

Farmers spent less to produce their crops and livestock in 1986. Government payments to farmers increased, but prices for their commodities dropped. Farmers' net cash income rose 10 percent to a record $52 billion, and net farm income climbed 17 percent. Net cash income is the difference between gross cash income and cash expenses. Net farm income includes all net cash income components and noncash income items, such as depreciation of farm capital and the value of inventory change. Income from nonfarm sources remained important to some farm households, generating $44.7 billion, up 5 percent from 1985.

Keywords: Farm income, balance sheet, costs of production, capital flows, output, productivity.

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PREFACE

This is one of five reports in the *Economic Indicators of the Farm Sector* series. Other reports are *Costs of Production, National Financial Summary, State Financial Summary,* and *Production and Efficiency Statistics.*

This publication was prepared by the staff of the Economic Indicators Research and Forecast Section, Farm Sector Financial Analysis Branch, Agriculture and Rural Economy Division, Economic Research Service.

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Generic Commodity Certificates	Michael Hanthorn	786-1840
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Governments' Intervention	Nicole Ballenger	786-1666
Balance Sheet, Interest Expense, Debt by Lender	James Ryan	786-1798
Operator Financial Stress	Elizabeth Nielson	786-1801
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Food and Fiber System	Gerald Schluter	786-1281
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Food Consumption	Judy Putnam	786-1866
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Rural Areas and Farm Linkages	Mary Ahearn	786-1807
Farm Households and U.S. Households Comparisons	Mary Ahearn	786-1807
	Cheryl Johnson	786-1807
Enterprise Costs and Returns	Robert McElroy (crops)	786-1801
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Projections for 1987	Richard Kodl	786-1807
Tax Reform	Diane Bertelsen	786-1807
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CONTENTS

Page

SUMMARY iv

LIST OF TABLES v

LIST OF FIGURES vi

OVERVIEW 1

FARM SECTOR PRODUCTION AND INCOME 1
- Productivity 1
- Price Ratios 2
- Cash Receipts 4
- Production Expenses 4
- Capital Flows and Formation 8
- Farm Income and Cash Flow 9

INCOME DISTRIBUTION IN THE FARM SECTOR 11
- Income Distribution by Type of Farm 11
- Characteristics of Farms by Size of Farm 14
- Off-farm Sources of Income 16

GOVERNMENT SUPPORT TO AGRICULTURE 21
- Income-Stabilizing Effects of Federal Farm Payments 21
- Direct Government Payments by Sales Class 21
- Generic Commodity Certificates 24
- Measurement of Governments' Intervention in Agriculture 26

FINANCIAL PERFORMANCE 27
- Farm Sector Balance Sheet 30
- Interest on Debt 32
- Debt Distribution among Lenders 33
- Operator Financial Stress 33
- Potential Losses on Agricultural Loans 39

LINKAGES OF AGRICULTURE TO OTHER SECTORS 43
- Food Consumption 43
- U.S. Agricultural Exports 45
- Effects of Farms' Locations 49
- Financial Well-being of Farm Operator Households Compared with all U.S. Households 50

PROJECTIONS FOR 1987-88 52
- Enterprise Costs and Returns 52
- Cash Receipts, Expenses, and Income in 1987 58
- Balance Sheet Forecasts for 1987 60
- Effects of Certificates in 1987 61
- Tax Reform and Agriculture 61

SUMMARY

Farmers spent less to produce their crops and livestock in 1986. Government payments to farmers increased, but prices for their commodities dropped. Farmers' net cash income rose 10 percent to a record $52 billion, and net farm income climbed 17 percent. Net cash income is the difference between gross cash income and cash expenses. Net farm income includes all net cash income components and noncash income items, such as depreciation of farm capital and the value of inventory change. Income from nonfarm sources remained important to some farm households, generating $44.7 billion, up 5 percent from 1985.

Lower prices contributed to a drop in commodity cash receipts. But, total production expenses declined $11 billion, and participation in Government commodity programs rose sharply. Wheat and corn growers enrolled 84 percent of base acreage in these programs. Direct Government payments increased by $4.1 billion while net Commodity Credit Corporation loans decreased $3.5 billion from 1985.

Earnings

- Declining production expenses helped stabilize 1986 farm income. Total expenses fell 9 percent to $122.1 billion. This downturn was led by falling expenditures for manufactured inputs (down 18 percent) and farm-origin inputs (feed and seed both down about 10 percent).

- Cash receipts for crops fell 15 percent, while livestock receipts rose 3 percent, leaving total cash receipts down 6 percent. Market receipts and net loans for program commodities fell 17 percent.

- While direct Government payments increased over 50 percent to $11.8 billion, net CCC outlays fell almost 30 percent from $11.8 billion to $8.3 billion. All Government outlays to the farm sector increased less than 3 percent from the $21.4-billion level reached in 1985.

- The Government issued generic commodity certificates worth $3.85 billion. Wheat program participants received about half the issuance and corn participants one-third. A total of $1.94 billion in certificates were exchanged for program commodities in 1986.

- Exports of agricultural commodities declined 16 percent in value and 19 percent in volume from calendar years 1985 to 1986. Corn and soybean oil sales fell markedly in value, 43 and 48 percent. The volume of feed grains exported fell 18 percent.

- The index of prices paid fell 4 percent, led by a 19-percent decline in prices of fuels and energy. The prices received index fell 5 percent. Food and feed grain price drops (18 and 20 percent) forced the crop price index down 12 percent.

- Crop farms, which represented 40 percent of all U.S. farms, received 52 percent of net cash income and 70 percent of total direct Government payments. Net cash income of cash grain farms dropped 8 percent, while net cash income of livestock farms registered a 29-percent increase.

- Small farms that had less than $40,000 of commodity sales accounted for less than 3 percent of the sector's net cash income from farming and over 80 percent of off-farm income.

- Midsized farms with annual sales from $40,000 to $250,000 constituted 23 percent of all farms, received 39 percent of net cash income, and 16 percent of off-farm income.

- Off-farm income was 46 percent of the total income available to farm households. However, it was less than 35 percent in Iowa, Minnesota, Nebraska, North Dakota, and South Dakota.

Financial Situation

- Farm sector equity eroded by $41 billion (6.2 percent). The value of farm and household assets fell $62 billion (about 7 percent), while debt declined $21 billion (about 15 percent).

- Farms with annual sales of more than $40,000 enjoyed improved financial conditions due to increased incomes and reduced debt burdens. However, according to an operator survey, 9 percent of commercial farms had debt/asset ratios of more than 0.40 and negative net cash farm income.

- There were 20 percent fewer insolvent farms than at the end of 1985. The decline was probably due to lender foreclosures and writeoffs as well as debt paydown. Total operator debt fell 17 percent. Fifty-five percent of farm businesses and 49 percent of farm households had debt/asset ratios less than 0.40 and positive net cash incomes.

- Financial conditions improved among beef, hog, and sheep producers, while cash grain farms lost ground. Nursery or greenhouse and dairy operations ranked highest in their financial performance. Farms in the Northeast had the best financial positions while those in the Corn Belt, Lake States, Northern Plains, and Southern Plains showed the most improvement.

LIST OF TABLES

Table		Page
1.	Farm sector productivity and inputs, selected years, 1970-86	2
2.	Crop and livestock production, 1983-86	3
3.	Index of prices received and paid by farmers, 1982-86	5
4.	Cash receipts by commodity, 1982-86	6
5.	Farm production expenses, 1982-86	7
6.	Farm sector capital flows (excluding operator dwellings), 1982-86	9
7.	Farm income and cashflow statement, 1981-86	10
8.	Income distribution by type of farm, 1985-86	13
9.	Distribution of farms, farm and off-farm income, and expenses, by sales class, selected years, 1970-86	15
10.	Commodity sales (including the value of net CCC loans), by value of sales class, 1986	15
11.	Selected recoverable and nonrecoverable Government outlays to the farm sector, calendar years 1981-86	23
12.	Direct Government payments and net Commodity Credit Corporation loans, 10 major States, 1982-86	24
13.	Total and per farm direct Government payments, by value of sales class, 1975 and 1980-86	25
14.	Quarterly generic certificate activity and farm price effects	27
15.	Ranking of producer subsidy equivalent levels, selected trading partners, 1982-84	28
16.	Balance sheet of the farm sector (including farm households), calendar years 1981-86	30
17.	Farm interest expenses and selected interest rates, 1981-86	32
18.	Distribution of farm debt (including operator households), by selected lenders, December 31, 1985-86	34
19.	Farm real estate and nonreal estate debt (including operator households), selected years, December 31, 1975-86	34
20.	Distribution of commercial-sized farms by size and debt/asset ratio, 1985-86	37
21.	Financial position of commercial-sized farms, 1984-86	37
22.	Distribution of commercial-sized farms by financial health category and farm size, 1985-86	37
23.	Distribution of commercial-sized farms, by financial health category and major enterprise, 1985-86	39
24.	Distribution of commercial-sized farms, by financial health category and region, 1985-86	39
25.	Potential loan losses estimated for commercial-sized farms from the 1986 *Farm Costs and Returns Survey*	41
26.	Debt at risk and potential lender loss	41
27.	Potential loan losses for selected State groups	42
28.	Losses on agricultural loans, 1984-86	42
29.	Estimated potential agricultural loan losses for lenders, 1985-87	42
30.	Employment in the food and fiber system, selected years, 1976-86	43
31.	Value added in the food and fiber system, selected years, 1976-86	44
32.	Annual per capita food consumption, retail weight equivalent, selected years, 1976-86	44
33.	Value of U.S. agricultural exports, selected years, 1981-86	46
34.	Volume of U.S. agricultural exports, January-December, 1984-86	47
35.	Share of U.S. farm production entering foreign markets, 1980-86	47
36.	Principal importers of U.S. agricultural products, 1985-86	48
37.	Foreign currency units per U.S. dollar, 1984-87	48
38.	Real trade-weighted dollar index of exchange rates, 1986-87	48
39.	Comparison of the adjusted USDA total income of farm operator households and the average U.S. money income, 1960-86	51
40.	Costs and returns for major U.S. crops, 1986-87	53
41.	Costs and returns for major U.S. livestock enterprises, 1986-87	55
42.	Taxes estimated from the 1986 *Farm Costs and Returns Survey*, before and after the Tax Reform Act of 1986, by size of farm	63
43.	Taxes estimated from the 1986 *Farm Costs and Returns Survey*, before and after the Tax Reform Act of 1986, by type of farm	64
44.	Total tax liabilities before and after the Tax Reform Act	65

LIST OF FIGURES

Figure		Page
1.	Indexes of prices received and paid by farmers, 1970-86	3
2.	Prices received, crops and livestock, 1970-86	4
3.	Net cash income per farm, by type of farm, 1985-86	12
4.	Net cash income per farm, by type of farm, 1985-86	12
5.	Regional comparisons of numbers of farms with sales of less than $40,000	14
6.	Regional comparisons of numbers of farms with sales of $40,000 to $99,999	17
7.	Regional comparisons of numbers of farms with sales of $100,000 to $249,999	17
8.	Regional comparisons of numbers of farms with sales of $250,000 or more	18
9.	Average off-farm income, by sales class, 1986	19
10.	Off-farm income as a percentage of total cash household income, by sales class, 1986	19
11.	Off-farm income as a percentage of total 1986 income, by State	20
12.	Net cash income and Government payments, 1980-86	22
13.	Direct Government payments per farm, by type of farm, 1985-86	22
14.	Wheat producer subsidies from consumer prices and tax revenue, 1982-84	29
15.	Dairy producer subsidies from consumer prices and tax revenue, 1982-84	29
16.	Nominal value of farm sector equity and debt, 1970-86	31
17.	Real value of farm sector equity and debt, 1970-86	31
18.	Financial health classifications	33
19.	Commercial farms with debt/asset ratios above 1, by sales class	36
20.	Vulnerable farms, by type of enterprise	38
21.	Average land value in metro vs. nonmetro counties	49
22.	Farm financial position, by county and agricultural dependence, 1986	50
23.	Tax code revisions	62

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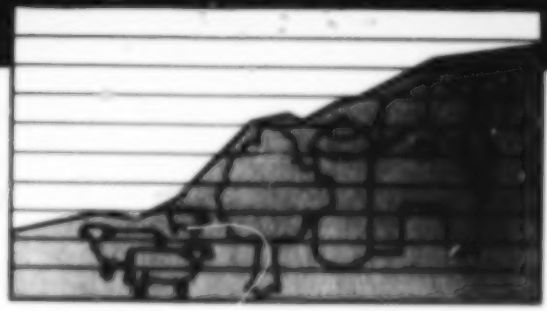

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ECONOMIC INDICATORS OF THE FARM SECTOR
FARM SECTOR REVIEW, 1986

OVERVIEW

This report provides an overall picture of the farm sector. Other reports in the *Economic Indicators of the Farm Sector* series present detailed information about specific aspects of sector performance. The "Farm Sector Review" contains less detail in some areas but covers a wider range of topics. We believe understanding conditions in agriculture can be enhanced by evaluating sector performance from several different perspectives. Data tables and graphs in this report are from various sources. Information may be based on official U.S. Department of Agriculture (USDA) estimates, USDA forecasts, or derived from survey data and other research programs.

Our description of the farm sector in 1986 begins with official estimates of aggregate production and income as summarized in the income accounts. The sector is composed of many diverse farming operations so that aggregate outcomes can misrepresent performance of subsectors. We address the diversity, and blunt any misrepresentation, by presenting analyses for specific farm types.

Government support to agriculture, as revealed by USDA estimates of program participation and payments, has increased. Descriptions of the distribution of payments, effects of farm programs on commodity prices and international trade, and the extent of intervention in agricultural markets by various governments were from separate research programs. We evaluated financial performance by examining official USDA estimates of total farm sector asset and debt values and by measuring financial stress and potential loan losses with data from farm operator surveys.

The farm sector, although a relatively small part of the U.S. economy, has important linkages to other sectors. Agriculture contributes significantly to national employment and gross national product. We included estimates of total domestic food consumption and foreign purchases of commodities because much of the demand for farm products originates outside the sector. The report includes forecasts of 1987 income and balance sheet data. Results of an analysis based on survey data describe some possible short-term effects of tax code changes on tax liabilities of farm operators.

FARM SECTOR PRODUCTION AND INCOME

Gross cash income depends on the value of marketed output and Government payments. Total production expenses and capital expenditures vary with quantities and prices of inputs. Aggregate income and cashflow statements summarize the results of production and marketing decisions made by individual farm operators throughout the year.

Productivity

We derived productivity indicators by comparing quantities of inputs and outputs. Because quantities can be measured in many different units, indexes facilitate annual comparisons of total inputs and outputs. The volume of inputs and the output of U.S. farms declined in 1986 (table 1). The index of crop output fell 9 percent, and the livestock output index rose 1 percent. The index of farm sector productivity declined from the 1985 level but remained above all annual index values since 1970.

Area planted to principal crops dropped by 14 million acres from 1985. Farm use of all nutrients declined in 1986, reflecting farmers' continued participation in acreage reduction programs and increases in acreage set-aside requirements for the wheat and corn programs. Farm use of fertilizer nutrients fell 9.6 percent from 1985 levels, from 21.7 to 19.6 million tons. Nitrogen use declined 9.2 percent compared with declines of 10.7 percent for phosphate and 9.5 percent for potash. Gasoline used for farming fell by 100 million gallons.

Feed grain output fell 8 percent, led by a 26-percent decline in oat production (table 2). Food grain output fell 13 per-

cent, with wheat production declining almost 14 percent. Oilseed output fell 6 percent. Output of livestock products increased. Pork production fell 5 percent, but turkey output rose 11 percent.

Price Ratios

The ratio of the index of prices received to the index of prices paid is a broad indicator of price movements which affect farm sector returns. Figures 1 and 2 show changes of some of the indexes of prices received and paid by farmers.

The index of prices received by farmers for all farm products fell 5 percent during calendar year 1986 (table 3). Prices averaged 12 percent less for crops, while livestock prices rose 1 percent. The simple average annual corn price fell from $2.49 in 1985 to $1.96. Prices of feed and food grains were influenced by the Food Security Act of 1985, which took effect during 1986.

The first major stage in current legislation, reducing the loan rate (domestic support price) for program commodities, lowered the artificial price floor, which, at a higher level, was detrimental to the competitive position of U.S. farm products in world markets. Two new policy instruments, marketing loans and generic commodity certificates, exerted downward pressure on producer prices by shifting a large volume of program commodities to the open market via rapid CCC loan redemptions.

Relatively higher prices prevailed during the first half of 1986 while provisions of the Agriculture and Food Act of

Table 1--Farm sector productivity and inputs, selected years, 1970-86

Item	1970	1975	1980	1984	1985	1986 1/
			1977=100			
Output index:						
Crops	77	93	101	111	117	108
Livestock	89	95	108	107	110	111
Total	84	95	104	112	119	113
Input index	97	96	103	96	93	N/A
Productivity index 2/	87	99	101	117	121	N/A
			Million acres			
Principal crops:						
Planted	293.2	332.2	356.7	345.1	342.3	328.2
Harvested	283.1	324.0	340.1	354.3	349.6	312.6
			Thousands			
Machinery on farms:						
Tractors 3/	4,619	4,469	4,752	4,671	4,676	N/A
Motor trucks	2,984	3,032	3,344	3,402	3,380	N/A
Grain combines 4/	790	524	652	644	645	N/A
Corn pickers and shellers 5/	635	615	701	684	684	N/A
Balers 6/	708	667	756	800	800	N/A
			Millions			
Tractor horsepower	203	222	304	311	311	N/A
			Horsepower			
Per tractor	56	61	64	67	67	N/A
Fertilizer use: 7/			1,000 tons			
Nitrogen	7,459	8,608	11,407	11,082	11,493	10,439
Phosphate	4,574	4,511	5,432	4,901	4,658	4,160
Potash	4,035	4,453	6,245	5,787	5,553	5,028
Total	16,068	17,572	23,084	21,790	21,703	19,626
Liming materials 8/	25,901	31,128	34,402	26,592	N/A	N/A
			Billion gallons			
Fuels for farming:						
Gasoline	4.0	4.5	3.0	2.1	1.9	1.8
Diesel	1.9	2.4	3.2	3.0	2.9	2.9

N/A=not available.
1/ Preliminary. No data for farm machinery inventories until completion of 1987 Agricultural Census. 2/ Data computed from unrounded index numbers. 3/ Includes wheel- and crawler-type tractors. 4/ Data for 1975 and after are for self-propelled combines only. 5/ Includes cornheads for combines. 6/ Does not include balers producing bales weighing more than 200 pounds. 7/ Includes 50 States and Puerto Rico. Includes fertilizer for nonfarm use. 8/ Includes 48 States only.

1981 were still in effect. However, prices began to slide with the approach of the new crop year under the influence of the 1985 farm act. Prices fell well below loan rates during the harvest season, especially for corn, which bottomed out at $1.40 during October 1986 (52 cents below the loan rate).

Livestock product prices increased for each commodity except beef, turkey, and milk. Broiler and hog producers each enjoyed price gains of about 15 percent despite large meat supplies. Milk prices fell despite strong end-of-year gains above normal seasonal movements, resulting from production cutbacks from the Dairy Termination Program.

Prices paid by farmers for all items (including household goods) fell for the second consecutive year. A component of this total index, items used in production, fell 4 percent in 1986 and was at its lowest level since 1980.

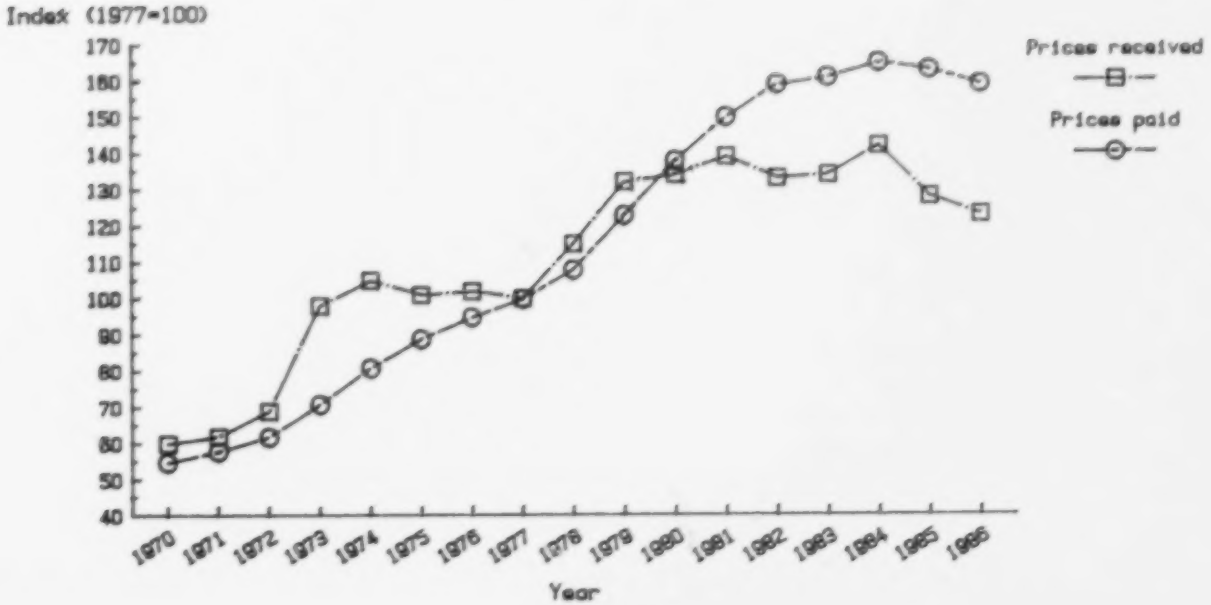
The precipitous decline in energy prices, which began in the spring and continued throughout the year, plus the falloff in

Table 2--Crop and livestock production, 1983-86

Commodity	Unit	1983	1984	1985	1986	Percentage change 1984-85	Percentage change 1985-86
		Million				Percent	
Crops:							
Wheat	Bushel	2,419.8	2,594.8	2,425.1	2,086.8	-6.5	-13.9
Rice	Cwt	89.7	139.8	134.9	134.4	-2.8	-.4
Corn	Bushel	4,174.7	7,674.0	8,876.7	8,252.8	15.7	-7.0
Oats	Bushel	477.0	473.7	520.8	384.5	9.9	-26.2
Barley	Bushel	508.9	589.2	591.4	610.5	-1.3	3.2
Sorghum	Cwt	487.5	866.2	1,120.2	941.6	29.3	-16.0
Hay-all	Ton	140.8	150.6	148.6	155.3	-1.3	4.5
Soybeans	Bushel	1,635.8	1,860.9	2,098.5	2,007.0	12.8	-4.4
Cotton	Bale	7.8	13.0	13.4	9.8	3.1	-26.9
Tobacco	Pound	1,429.0	1,728.0	1,511.6	1,198.3	-12.5	-20.7
Livestock products:							
Beef	Pound	23,060	23,598	23,728	24,371	.6	2.7
Pork	Pound	15,117	14,812	14,807	14,063	0	-5.0
Broilers	Pound	12,400	13,016	13,762	14,316	5.7	4.0
Turkeys	Pound	2,649	2,685	2,942	3,271	9.6	11.2
Eggs	Dozen	5,659	5,708	5,688	5,715	-.4	.5
Milk	Cwt	1,397	1,354	1,431	1,440	5.7	.6

Sources: U.S. Department of Agriculture, National Agricultural Statistics Service. Crop Production, 1986 Summary, and Economic Research Service, Agricultural Outlook, August 1987, pp. 49-50.

Figure 1--Indexes of prices received and paid by farmers, 1970-86



fertilizer and feed prices, led an array of price reductions centered in manufactured and farm-origin inputs. With crude oil prices falling as low as $10 per barrel, the index of nonfarm-origin inputs declined 4 percent.

Cash Receipts

Cash receipts from 1986 open market sales and net Commodity Credit Corporation (CCC) loans totaled $135.2 billion, down 6 percent (table 4). Sharply lower prices for program commodities (food grains, feed grains, soybeans, peanuts, tobacco, cotton, sugar crops, milk, wool, mohair, and honey), partly a result of large stocks and reduced CCC loan rates, caused 1986 receipts to register their largest percentage reduction since 1949. Receipts from program commodities plunged 17 percent after realizing a 9-percent gain the year before. Program commodities accounted for 42 percent of cash receipts in 1986, down from 47 percent in 1985 and the 1974 peak of 51 percent. Nonprogram commodity receipts rose 3 percent mostly due to gains in poultry and horticultural specialty crops.

Much of the decline in cash receipts originated in the crop sector as prices received averaged a 12-percent drop. Because of the export-oriented objectives of the 1985 farm act, reductions in crop prices and receipts were actually short-term, legislated tradeoffs with rising direct Government payments. Besides benefiting from the income-stabilizing effects of direct payments, producers of crops supported by farm programs also were able to take advantage of commodity price support loans to buoy their gross receipts. Net CCC loans accounted for 15 percent of program commodity cash receipts.

While crop receipts fell, livestock producers realized a 3-percent gain. Hogs and broilers accounted for most of the gain, and cattle producers stayed even. Milk cash receipts were down as whole-herd buyouts boosted direct payments received by dairy producers. Poultry producers rebounded strongly from an 8-percent reduction in 1985 receipts to record their best year ever in 1986. Increased production and demand pushed broiler receipts up 19 percent. Between 1982 and 1986, broiler receipts rose about 50 percent, second in performance to turkey (up 55 percent) among major commodities.

California had higher cash receipts than any other State, $14 billion, as it has had for decades. Iowa was second with $9.1 billion. The top 5 States accounted for 34 percent of receipts, and the top 10 accounted for 52 percent, the same percentages as 10 years ago. Gains in poultry receipts pushed livestock receipts up and helped defray crop losses for Arkansas, North Carolina, and Georgia, the three major poultry-producing States. The Corn Belt, which accounted for 20 percent of farm cash receipts in 1986, realized a 9-percent loss in total receipts. An 18-percent decline in crop receipts outweighed a 3-percent gain in livestock receipts.

Production Expenses

Farm production expenses include inputs of manufactured and farm origin, interest payments, several operating expenses, and overhead costs. Inputs of farm origin in this aggregate include feed, seed, and livestock. Manufactured inputs consist of fertilizer, fuels and oil, electricity, and agricultural chemicals. Interest payment expenses reflect both short-term and long-term obligations. Operating expen-

Figure 2--Prices received, crops and livestock, 1970-86

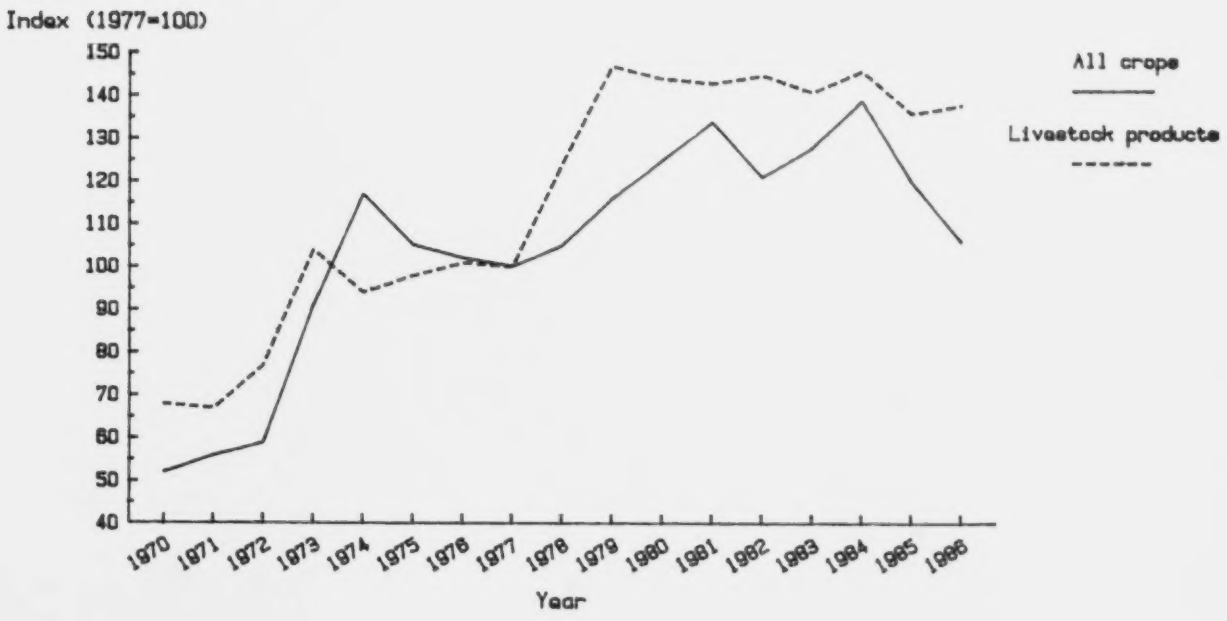


Table 3--Index of prices received and paid by farmers, 1982-86

Item	1982	1983	1984	1985	1986	Percentage change 1983-84	1984-85	1985-86
	1977=100					Percent		
Prices received:								
Crops	121	128	139	120	106	9	-14	-12
Food grains	146	148	144	133	109	-3	-8	-18
Feed grains and hay	120	143	145	122	98	1	-16	-20
Oil crops	88	102	109	84	77	7	-23	-8
Cotton	92	104	108	93	91	4	-14	-2
Tobacco	153	155	153	153	138	-1	0	-10
All fruit	175	128	202	181	167	58	-10	-8
Vegetables	126	130	135	127	129	2	-6	2
Livestock	145	141	146	136	138	3	-7	1
Meat animals	155	147	151	142	145	3	-6	2
Poultry and eggs	110	118	135	119	128	14	-12	8
Dairy products	140	140	139	131	129	-1	-6	-2
All farm products	133	135	142	128	122	5	-10	-5
Prices paid:								
Production items	153	152	155	151	145	1	-3	-4
Feed	122	134	135	116	108	1	-14	-7
Feeder livestock	164	160	154	154	153	-4	0	-1
Seed	141	141	151	153	148	7	1	-3
Fuels and energy	210	202	201	201	162	0	0	-19
Fertilizer	144	137	143	135	124	4	-6	-8
Farm chemicals	119	125	128	128	127	2	0	-1
Farm and motor supplies	152	152	147	146	144	-3	-1	-1
Autos and trucks	159	170	182	193	198	7	6	3
Tractors and self-propelled machinery	165	174	181	178	174	4	-2	-2
Other farm machinery	160	171	180	183	184	5	2	1
Building and fencing	135	138	138	136	136	0	-1	0
Services and cash rent	169	145	152	150	150	2	-1	0
Farm wage rates	144	148	151	154	160	2	2	4
Farm-origin items	139	144	144	133	128	0	-8	-4
Nonfarm-origin items	166	160	169	167	160	2	-1	-4
Production items, taxes, interest, and wages	159	159	162	157	151	1	-3	-4
Commodities, services, interest, taxes, wages	159	161	165	163	159	2	-1	-2
Ratio of prices received to prices paid 1/	84	84	86	79	77	2	-9	-2

1/ Index of prices received by farmers for all farm products divided by prices paid by farmers for commodities, services, interest, taxes, and wages.

Source: U.S. Department of Agriculture, National Agricultural Statistics Service, Agricultural Statistics Board. Agricultural Prices.

Table 4--Cash receipts by commodity, 1982-86

Item	1982	1983	1984	1985	1986	Percentage change 1/ 1984-85	Percentage change 1/ 1985-86
	- - - -Billion dollars- - - -					- -Percent- -	
Crop receipts:							
Food grains	11.4	9.7	9.6	9.1	5.9	-5	-34
Wheat	9.9	8.8	8.5	7.9	5.2	-6	-35
Rice	1.5	.9	1.0	1.1	.7	7	-33
Feed grains and hay	17.4	15.5	15.8	22.5	17.8	42	-21
Corn	12.8	10.9	10.7	16.8	13.3	58	-21
Oats	.3	.3	.3	.3	.2	-4	-37
Barley	.8	1.0	1.1	1.0	.8	-3	-20
Grain sorghum	1.5	1.2	1.5	2.0	1.4	35	-28
All hay	2.0	2.2	2.3	2.3	2.1	1	-9
Oil crops	13.8	13.5	13.9	12.6	10.5	-9	-17
Soybeans	12.5	12.2	12.2	11.3	9.2	-7	-19
Peanuts	.8	.8	1.2	1.0	1.1	-18	6
Other oil crops	.5	.6	.5	.3	.3	-37	-5
Cottonlint and seed	4.5	3.7	3.3	3.7	2.9	14	-22
Tobacco	3.3	2.8	2.8	2.7	1.9	-4	-30
Fruits and nuts	6.8	6.1	6.8	6.8	6.9	1	1
Vegetables	8.1	8.5	9.1	8.6	8.7	-6	2
Greenhouse, nursery	4.0	4.5	5.2	5.5	5.8	5	5
Other crops	3.0	2.8	2.8	2.9	3.1	3	6
Subtotal, crops 2/	72.3	67.1	69.4	74.4	63.6	7	-15
Livestock receipts:							
Red meats	40.9	38.9	40.8	38.6	39.1	-5	1
Cattle	27.8	26.7	28.7	27.0	26.9	-6	0
Calves	2.0	2.0	2.0	2.1	2.1	5	0
Hogs	10.7	9.8	9.7	9.0	9.7	-7	7
Sheep and lambs	.4	.4	.5	.5	.5	8	-4
Poultry and eggs	9.5	10.0	12.2	11.2	12.7	-8	13
Broilers	4.5	4.9	6.0	5.7	6.8	-5	19
Turkeys	1.3	1.3	1.7	1.8	2.0	10	7
Eggs	3.4	3.4	4.1	3.3	3.5	-20	8
Other poultry	.4	.4	.4	.4	.4	0	-2
Dairy products	18.2	18.8	17.9	18.1	17.8	1	-1
Wholesale milk	17.9	18.5	17.7	17.8	17.6	1	-1
Retail milk	.3	.3	.3	.3	.3	9	-4
Other livestock	1.6	1.8	2.0	1.9	1.9	-2	0
Subtotal, livestock 2/	70.3	69.4	72.9	69.8	71.6	0	3
Total receipts 2/	142.6	136.6	142.3	144.2	135.2	1	-6

1/ Percentage change may not correspond to data shown due to rounding.
2/ Totals may not add due to rounding.

ses include costs incurred for capital repairs and operation, hired labor, machine hire and customwork, and various miscellaneous expenses. Overhead costs include property taxes and net rent to nonoperating landlords.

Total production expenses of $122.1 billion for 1986 were 8.7 percent lower than the revised 1985 estimate of $133.7 billion (table 5). This decline was the largest annual percentage drop since 1931-32 and was the fourth largest since 1910. Given the $9-billion decline between revised 1984 and 1985 estimates, total production expenses have fallen $20.6 billion (15 percent) since 1984.

Production expenses were lower in 1986 than in 1985 for most major expense categories. The largest absolute reductions were in the categories of capital consumption ($1.9 billion), feed ($1.8 billion), fuel and oil ($1.8 billion), fertilizer and lime ($1.5 billion), and net rent ($1.4 billion). The largest percentage reductions were in the categories of fuel and oil (27 percent), fertilizer (20 percent), machine hire and customwork (18 percent), and net rent (18 percent).

Changes in expenses between 1985 and 1986 reflected either changes in prices, changes in quantities used, or changes in both. Items where both price and quantity declined showed the largest percentage reductions. Reduced acres, required for participation in Government commodity programs, were a major factor in reducing the quantities of inputs used. Planted and harvested acres of principal crops declined 4 percent and 5 percent, respectively, from 1985 to 1986. Lower crude oil prices resulted in reduced costs for petroleum-based products, such as fuel and fertilizer.

Fuel expenses fell 27 percent, mainly because of a 19-percent reduction in prices paid by farmers. The remainder was probably due to reduced acreage and reduced tillage. The 20-percent decline in fertilizer and lime expenses and the 11-percent decline in seed expenses split almost evenly between declines in prices paid and quantities used. Application and seeding rates also may have declined.

Reduced applications contributed most to the 10-percent decline in pesticide expenses. Harvested acres of corn, soybeans, and cotton, the field crops on which pesticides are most heavily used, declined 7 percent. Farmers appeared to have reduced per acre application rates. The National Agricultural Statistics Service (NASS) reported that the price of agricultural chemicals declined 1 percent.

Declines in the fixed expense category of capital consumption (depreciation and casualty losses) reflect reduced investment. Capital consumption expenses are based on existing capital stocks of buildings and equipment. The levels of existing capital stocks depend on the timing and levels of

Table 5--Farm production expenses, 1982-86

Item	1982	1983	1984	1985	1986	Percentage change 1984-85	Percentage change 1985-86	Absolute change 1985-86
	Billion dollars					Percent		Billion dollars
Feed	18.6	21.7	19.9	18.0	16.2	-9	-10	-1.8
Livestock	9.7	8.8	9.5	9.0	9.6	-5	7	.6
Seed	3.2	3.0	3.4	3.4	3.0	-3	-11	-.4
Farm origin inputs	31.4	33.5	32.8	30.4	28.8	-7	-5	-1.6
Fertilizer	8.0	7.1	7.4	7.3	5.8	-2	-20	-1.5
Fuels and oils	7.9	7.5	7.1	6.6	4.8	-8	-27	-1.8
Electricity	2.0	2.1	2.2	2.1	2.1	-1	-1	0
Pesticides	4.3	4.2	4.8	4.8	4.3	1	-10	-.5
Manufactured inputs	22.2	20.9	21.5	20.8	17.0	-3	-18	-3.8
Short-term interest	11.3	10.6	10.4	8.8	7.8	-15	-12	-1.0
Real estate interest	10.5	10.8	10.7	9.9	9.1	-8	-8	-.8
Total interest 1/	21.8	21.4	21.1	18.7	16.9	-11	-10	-1.8
Repair and operation	6.4	6.5	6.4	6.4	6.4	-1	1	0
Hired labor	10.1	9.7	9.7	9.8	9.9	1	1	.1
Machine hire and customwork	2.0	1.9	2.2	2.2	1.8	1	-18	-.4
Dairy deductions	0	.7	.7	.2	.4	-75	164	.2
Other operating expenses	11.6	12.3	12.5	12.1	11.0	-3	-9	-1.1
Total operating expenses 1/	30.1	31.1	31.4	30.6	29.5	-3	-4	-1.1
Depreciation	24.3	23.9	23.1	20.9	19.0	-10	-9	-1.9
Taxes	4.0	4.5	4.1	4.2	4.1	4	-3	-.1
Net rent 2/	6.1	5.1	8.6	8.1	6.7	-6	-18	-1.4
Total overhead expenses 1/	34.4	33.4	35.8	33.2	29.8	-7	-10	-3.4
Total production expenses 1/	140.0	140.4	142.7	133.7	122.1	-6	-9	11.6

1/ Totals may not add due to rounding. 2/ Rent paid to nonoperating landlords.

current and previous capital purchases. The 9-percent decline in capital consumption between 1985 and 1986 paralleled the continuing decline in capital expenditures, also 9 percent. (See section on net capital formation.)

Interest expense, the other major fixed expense category, declined 10 percent as both farm debt outstanding and interest rates fell. Farm debt outstanding (excluding CCC loans) declined from $188 billion at the end of 1985 to $167 billion at the end of 1986. Farmers have used improved income from lower overall expenses and direct Government payments for debt paydown, and some debt has been written off by lenders. Average annual interest rates declined 10 percent, according to NASS.

The 18-percent reduction in machine hire and customwork expenses partly came from declines in total planted and harvested acres, which likely reduced the demand for customwork. Reduced demand probably led to lower custom rates. Custom rates may also have been lower because the supply of available customwork services increased. Farmers with fewer acres of their own to work were probably willing to do customwork for others.

Farmers spent 10 percent less on feed purchases. Lower feed prices prompted about 70 percent of this decline. The remainder probably came from fewer "grain-consuming animal units" on farms in 1986, the use of CCC generic certificates rather than cash to acquire grain, and a probable increase in the feeding of home-produced grain.

Net rent declined 18 percent. Estimates of net rent received by nonoperator landlords equal gross cash rent, gross share rent, and Government payments received by landlords minus operating and fixed expenses paid by landlords. Unweighted averages of Economic Research Service (ERS) estimates of State-level, cash rental rates showed significant declines in major agricultural regions. Rates declined 9 percent in the Corn Belt, 10 percent in the Delta States, 8 percent in the Southern Plains, and 6 percent in the Northern Plains. Average rental rates reflected the 10-percent decline from 1985 in the total value (including Government payments) of crops produced during the 1986 calendar year.

Landlord major expenses, such as real estate interest, real estate taxes, and capital consumption, declined by smaller percentages than total operating expenses. If expenses paid by landlords had declined by the same amount as expenses paid by farm operators, then landlord expenses would have been higher and the decline in net rent would have been less. No information on changes in the amount of rented land was available, although any change would have significantly effected the total rent expense.

Estimating production expenses is complicated by the ability of farmers to modify or defer production costs, especially by substituting farm-produced inputs or services for purchased inputs or services. Feed, seed for some crops, and livestock can be grown rather than purchased from dealers. Repairs can be deferred or performed by the operator rather than by a mechanic. Family labor can be substituted for hired labor. Farmers can purchase inputs in 1 year for use in another; the cost of the inputs are then charged to the year of purchase rather than the year of use. Little information is available which accounts for these modifications.

Input costs of some of the substituted goods and services will show up in other expense accounts. The value of unpaid inputs, such as family labor, will not show up as expense items but will be some unknown part of net farm income. When unpaid inputs are substituted for purchased goods and services, total production expenses are smaller and net income larger than they otherwise would have been.

Capital Flows and Formation

Gross capital expenditures for service buildings, land improvements, vehicles, and equipment were 11 percent lower in 1986 than revised 1985 estimates (table 6). Expenditures declined in all major categories except service buildings and automobiles. Reduced expenditures on machinery and equipment reflected declining cash receipts from crops, reduced need for machinery as farmers expected Government acreage reduction programs to continue for the next several years, and the availability of used machinery at lower prices.

Continued surplus grain production and more favorable cash receipts from livestock led to increased spending on grain storage and livestock production facilities. Expenditures for grain storage facilities increased by $132 million (80 percent). Expenditures also increased for beef cattle and poultry production facilities. Increases in expenditures for these categories, along with increases in expenditures for equipment storage and farm shops, were sufficiently high that total service building expenditures increased despite declines in expenditures for dairy production facilities, multipurpose buildings, and worker dwellings.

Underlying the continued decline in total capital expenditures was continued caution on the part of farmers and lenders. Equipment and buildings purchased at record levels during the late 1970's and early 1980's still have useful lives. When replacement was necessary, used machinery was available at reduced prices (partly the result of continued financial stress for some farmers who were forced to sell their equipment). Data on used machinery expenditures from the *Farm Costs and Returns Survey* (FCRS) indicated that 87 percent of tractors purchased were previously owned, and expenditures for used tractors were 62 percent of total tractor expenditures. In 1985, 79 percent of tractors purchased were previously owned, and expenditures for used tractors were 55 percent of total tractor expenditures. In contrast, only 40 percent of total tractor expenditures in 1979 were for used tractors.

Because buildings, of course, cannot be moved as easily as machinery, farmers are less likely to incorporate used buildings into their operations than to incorporate used

machinery. Farmers do remodel existing buildings, however. Remodeled buildings accounted for one-third of the number of buildings for which capital expenditures were made in 1986.

Expenditures for remodeling were 10 percent of total capital expenditures on service buildings in 1986, down from 19 percent in 1985. Spending on new construction exceeded expenditures for remodeling in all building categories except workers' dwellings where remodeling expenditures were 17 percent higher than expenditures for new construction.

The downward trend in total capital expenditures started in 1980. Nominal capital expenditures in 1986 were 57 percent lower than the all-time high reached in 1979. The 1986 expenditure level was 64 percent lower than the 1979 level in real terms (calculated with the GNP implicit deflator).

Estimated net capital formation was minus $10.6 billion in 1986. Much of this decrease (69 percent) occurred because gross capital expenditures for buildings, vehicles, and machinery were less than calculated capital consumption allowances. Calculated capital consumption estimates likely exceed economic depreciation, however, because an asset may have useful life beyond that assumed in the calculation procedure.

In the 1980's, the level of negative capital formation has varied with the value of changes in crop and livestock inventories. Net capital formation for buildings, vehicles, and machinery has been relatively constant since 1982 at approximately minus $8 billion, while the value of changes in crop and livestock inventories has varied from $6.1 billion to minus $10.9 billion. The positive 1983 value for changes in inventories was not large enough to offset negative values for other items in net capital formation. Negative values for inventory changes in other years have reinforced negative values for other net capital formation. This was true in 1986 when inventory changes accounted for 31 percent of the decline in net capital formation. Estimated net capital formation (real and nominal) has been negative since 1981.

Farm Income and Cash Flow

Net farm income measures the net value of agricultural production for a given calendar year, regardless of whether commodities are sold, placed under CCC loan, fed, or placed in inventory. It is the difference between gross farm income,

Table 6--Farm sector capital flows (excluding operator dwellings), 1982-86

Item	1982	1983	1984	1985	1986
	Million dollars				
Gross capital expenditures	13,261	12,738	12,520	9,615	8,559
Service buildings	2,524	2,068	2,076	1,314	1,459
Land improvements	1,233	1,211	1,178	942	680
Tractors	2,597	2,606	2,539	1,937	1,513
Trucks 1/	1,475	1,718	1,703	1,537	1,462
Automobiles 1/	364	399	341	225	252
Other machinery and equipment	5,068	4,735	4,682	3,660	3,193
Inventory change	-1,382	-10,851	6,184	-2,663	-3,269
Crops	-736	-10,474	7,881	-748	-1,799
Livestock	-646	-377	-1,697	-1,915	-1,470
Gross savings 2/	11,879	1,887	18,704	6,952	5,290
Capital consumption allowances 3/	20,147	19,918	19,213	17,428	15,848
Depreciation	19,798	19,535	18,823	17,031	15,454
Service structures	3,546	3,370	3,199	2,708	2,411
Tractors	4,190	3,969	3,602	2,982	2,830
Trucks 1/	2,229	2,363	2,352	2,347	2,002
Automobiles 1/	870	883	906	714	570
Other machinery and equipment	8,963	8,950	8,764	8,280	7,641
Accidental damage	349	383	390	397	394
Service structures	321	352	359	364	362
Vehicles and machinery	28	31	31	33	32
Net capital formation 4/					
Nominal dollars	-8,268	-18,031	-509	-10,476	-10,558
Real dollars 5/	-9,434	-19,801	-539	-10,749	-10,558

1/ Share used in farm business only. 2/ Gross capital expenditures and inventory change. 3/ Depreciation and accidental damage. 4/ Gross savings less capital consumption allowances. USDA currently does not calculate depreciation for land improvements. Without such an account, total net capital formation is overstated. 5/ GNP implicit deflator, 1986=100.

including the value of inventory change, and total farm production expenses. Net farm income includes benefits and expenses associated with farm operator households, such as the value of commodities consumed onfarm, the rental value of operator dwellings, and depreciation.

Net cash income measures the total income that farmers receive in a given year, regardless of the level of current production or the year in which marketed output was produced. It is the difference between gross cash income received from farming and cash expenses incurred. We exclude income and expenses associated with the farm household.

Net cash flow is the sum of net cash income, the change in loans outstanding, and net rent paid to all landlords, minus gross capital expenditures. It measures cash available to operators and landlords in a calendar year and indicates the shortrun financial position of farmers, their ability to meet current obligations and provide for family living expenses, and their ability to undertake investments.

Table 7 illustrates the recent role of falling expenses in offsetting declining farm income. Total expenses (item 7) declined over $11 billion between 1985 and 1986, a record single-year drop. Lower expenses were enjoyed almost across the board with lower fuel bills, lower priced petroleum-based inputs, less planted acreage, and lower per acre fertilizer application rates all contributing. Further savings came from lower interest expenses and sharp reductions in feed costs.

Total production expenses consist of both cash and noncash items, while cash expenses contain only the former. By definition, cash expenses will be less than total production expenses in any given year. In 1985 and 1986, cash expenses averaged nearly 20 percent below total production expenses. The major difference between these two categories is that cash expenses exclude depreciation, perquisites to hired labor such as meals and lodging, and expenditures on the operator's dwelling. These definitions suggest that cash expense is more of a business concept, while total production expense is a broader measure that in-

Table 7--Farm income and cashflow statement, 1981-86 1/

Item	1981	1982	1983	1984	1985	1986
			Billion dollars			
1. Cash receipts	144.1	142.6	136.6	142.3	144.2	135.2
Crops 2/	72.5	72.3	67.1	69.4	74.4	63.6
Livestock	69.2	70.3	69.4	72.9	69.8	71.6
Farm-related income 3/	2.5	4.5	4.5	4.4	5.0	5.1
2. Direct Government payments	1.9	3.5	9.3	8.4	7.7	11.8
Cash payments	1.9	3.5	4.1	4.0	7.6	8.1
Value of PIK commodities	0	0	5.2	4.5	.1	3.7
3. Gross cash income (1+2)	146.0	150.6	150.4	155.1	156.9	152.0
4. Nonmoney income 4/	13.8	14.3	13.5	13.4	11.8	10.8
5. Value of inventory change	6.5	-1.4	-10.9	6.2	-2.7	-3.3
6. Gross farm income (3+4+5)	166.3	163.5	153.1	174.7	166.0	159.5
7. Total expenses	139.4	140.0	140.4	142.7	133.7	122.1
8. Net farm income (6-7):						
Nominal total net	26.9	23.5	12.7	32.0	32.3	37.5
Real, 1982 dollars 5/	28.6	23.5	12.2	29.7	29.0	32.9
9. Cash expenses 6/	113.2	112.5	113.3	116.3	109.6	100.1
10. Net cash income (3-9):						
Nominal	32.8	38.1	37.1	38.8	47.3	52.0
Real, 1982 dollars 5/	34.9	38.1	35.7	36.0	42.4	45.6
11. Changes in loans 7/	15.6	7.3	3.5	-1.6	-14.9	-17.8
Real estate	9.4	4.0	2.5	-.8	-5.6	-7.3
Nonreal estate 8/	6.2	3.4	.9	-.8	-9.2	-10.5
12. Rental income	6.4	6.3	5.7	7.8	8.8	7.8
13. Capital expenditures 7/	16.8	13.3	12.7	12.5	9.6	8.6
14. Net cash flow (10+11+12-13)	37.9	38.6	33.6	32.5	31.6	33.3
15. Off-farm income	35.8	36.4	37.0	38.3	42.5	44.7

1/ Totals may not add due to rounding. Numbers in parentheses indicate the combination of items required to calculate a given item. 2/ Includes net CCC loans. 3/ Income from sales of forest products, customwork, machine hire, farm recreational activities, and other miscellaneous sources. 4/ Value of home consumption of farm products and imputed rental value of farm dwellings. 5/ Deflated by the GNP implicit price deflator. 6/ Excludes perquisites to hired labor, farm household expenditures, and depreciation of farm capital. 7/ Excludes farm households. 8/ Excludes CCC loans.

corporates costs associated with maintenance of the farm household and hired labor.

Nominal net cash income increased $4.7 billion from 1985 to a record $52 billion during 1986. Net cash income (in nominal dollars) reached record levels. These figures fell roughly 10 percent short of the 1970's average, when adjusted for inflation. Driven by lower prices and large acreage reductions, cash receipts from crops (including net CCC loans) decreased sharply from 1985, while direct Government payments increased. The gain in net cash income came from reduced production expenses, increased income from customwork and machine hire, growth in Federal subsidies, and higher livestock earnings.

Nominal and real net farm income also rose in 1986. Inventories were adjusted downward based largely on lower corn production and a major drawdown in cattle and calf stocks. Rental income earned by nonoperator landlords also fell again in 1986, keyed by an 8-percent drop in land values.

Values of real estate and nonreal estate loans outstanding (excluding CCC loans) fell nearly $18 billion by the end of 1986. Strong income pushed 1986 net cash flow up roughly $1.8 billion from the year earlier, despite large negative changes in loans (paydowns) and a $1-billion fall in rental income.

INCOME DISTRIBUTION IN THE FARM SECTOR

Incomes of particular types of farms may differ markedly from the national average. This section reviews farm income according to major types of commodities produced and gross value of sales. Gross income, expenses, and Federal farm program payments may vary among distinct, specialized operations. Off-farm income also varies markedly in magnitude and importance among farms of different types and sizes. We derived the distributions that follow by using benchmark distributors from farm survey data.

Income Distribution by Type of Farm

Two aggregate farm types are livestock and crop farms, those receiving over half of their cash receipts from livestock or crops. (These enterprise types may produce and sell other commodities.) For example, a farm generating 55 percent of its sales from animal products and 45 percent from crops would be classified as a livestock farm. Classification of U.S. farms by enterprise type indicated that 60 percent specialized in livestock in 1985-86, and the remainder specialized in crops.

Within these broad classifications, crop or livestock, more narrowly specified enterprise types depend on sources of cash receipts. Average net cash incomes of farms with various types of major enterprises are illustrated in figure 3. *We omitted poultry, vegetable, and nursery-greenhouse* operations from figure 4 to focus on the differences among the more common major enterprise types with relatively lower average incomes.

In 1986, crop farms received an estimated 46 percent of total cash receipts (table 8). Crop farms received 52 percent of net cash income, down 4 percent to $26.8 billion. Crop farms received over 70 percent of total direct Government payments in calendar year 1986. This component of income rose nearly $3 billion, while cash receipts fell $9 billion for all major crop enterprises. Unprecedented expense reductions (10 percent for crop farms) and a significant rise in Federal subsidies prevented further erosion of crop farms' net cash income. Had expenses and Federal supports remained at 1985 levels, 1986 net cash income for crop enterprises would have fallen more than $9 billion.

The overall performance of crop farms was heavily influenced by farms specializing in corn, wheat, rice, soybeans, and by cash grain farms. Cash grain farms had a majority of sales either from sorghum, barley, oats, or in combination with corn, wheat, rice, or soybeans. Cash grain, corn, wheat, rice, and soybean farms were 53 percent of all crop farms in 1986. Production expenses on cash grain farms fell almost $1 billion (11 percent), providing only partial relief from the average 19-percent drop in prices received for food grains and feed grains. Average prices received for all crops, led by grain prices, fell 12 percent. Net cash income (in constant dollars) of all cash grain farm types was down 10 percent from 1985.

Cotton farms earned nearly $750 million less in cash receipts than in 1985, while Government outlays, principally deficiency payments, rose 28 percent to $693 million. Lower expenses helped cushion the fall in earnings, but net cash income still fell 19 percent. Cotton farms retired an estimated $400 million in liabilities, keying a 2-percent improvement in the average debt/asset ratio.

Livestock farms have been a fairly constant proportion of all farms, about 60 percent since 1983, and remained so in 1986. Net cash income of livestock farms increased $5.6 billion, buoyed by a 2-percent gain in meat animal prices and a 13-percent gain in poultry and egg receipts. Government outlays in support of livestock farms, due largely to their crop production, rose more than $1.1 billion. Milk diversion payments fell sharply from $429 million to less than $1 million, but the dairy herd buyout provided $620 million in compensation.

Net cash income of livestock farms rose $5.6 billion (29 percent) to $25.1 billion, with gains fairly evenly distributed throughout the subsector. Lower cash expenses (mainly due to sharp reductions in feed expenditures), higher receipts, and larger Government payments accounted for most of the income growth.

Figure 3--Net cash income per farm, by type of farm, 1985-86

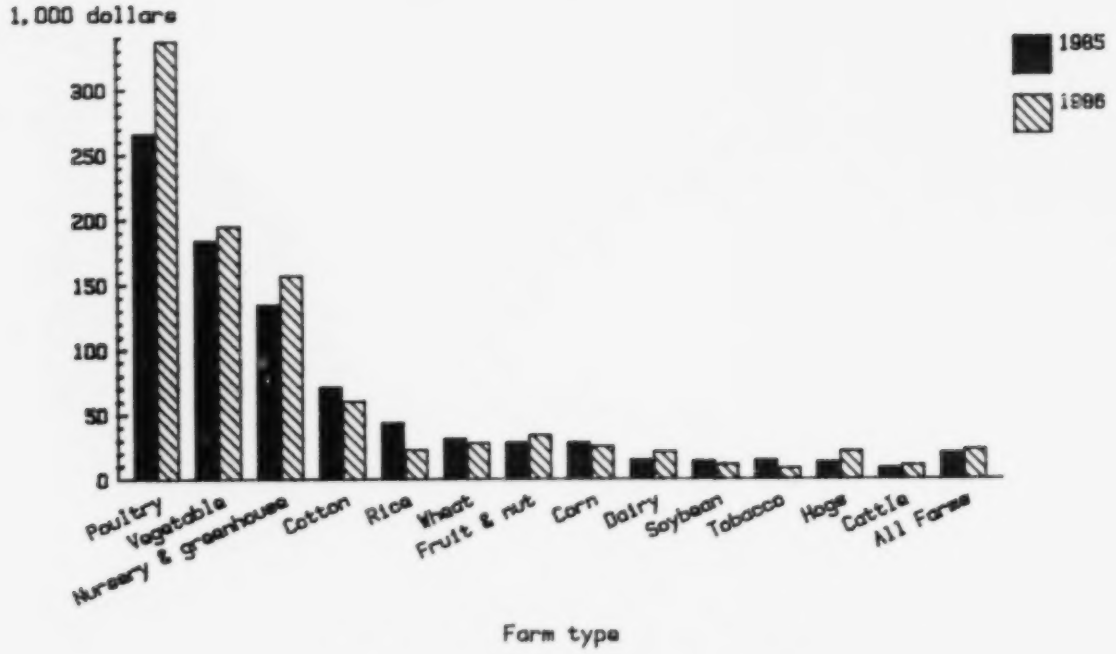
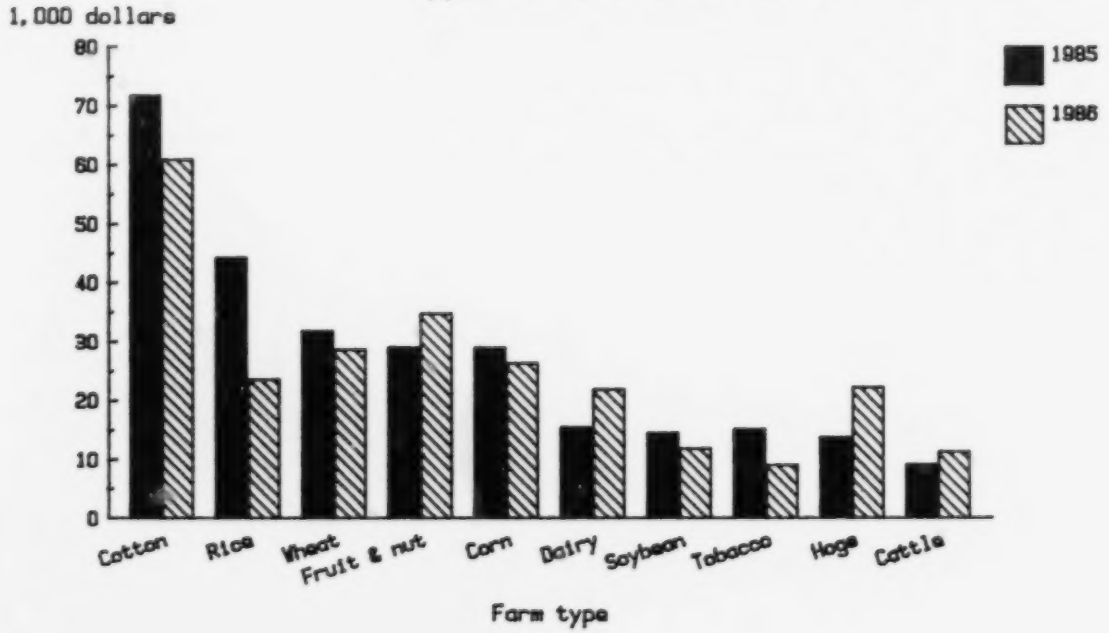


Figure 4--Net cash income per farm, by type of farm, 1985-86 1/



1/ These data broaden the scale for selected enterprise types in fig. 3. Per farm net cash income ranged below $100,000 for these farms.

Table 8--Income distribution by type of farm, 1985-86

Type and year	Number of farms	Cash receipts: Crops	Cash receipts: Livestock	Direct payments	Gross cash income 1/	Total expenses	Net cash income 2/: Current	Net cash income 2/: Constant
	Thousands			Million dollars				
All farms:								
1985	2,275	74,415	69,777	7,703	156,882	109,601	47,282	42,405
1986	2,214	63,592	71,508	11,813	151,966	100,054	51,912	45,597
Crop farms:								
1985	911	66,310	4,610	5,477	78,103	50,369	27,734	24,873
1986	887	57,172	4,752	8,421	71,963	45,191	26,772	23,464
Wheat:								
1985	72	4,074	292	1,017	5,549	3,256	2,293	2,056
1986	70	2,752	296	1,704	4,911	2,903	2,008	1,760
Rice:								
1985	10	1,242	12	209	1,478	1,036	443	397
1986	10	871	12	255	1,153	917	236	207
Corn:								
1985	170	12,986	775	1,565	15,687	10,759	4,928	4,420
1986	165	10,292	806	2,398	13,838	9,482	4,356	3,818
Soybean:								
1985	96	4,448	152	348	5,059	3,660	1,399	1,255
1986	93	3,534	157	548	4,340	3,230	1,110	973
Cotton:								
1985	22	3,669	48	541	4,347	2,767	1,580	1,417
1986	21	2,921	48	693	3,742	2,462	1,280	1,122
Tobacco:								
1985	82	2,363	127	32	2,550	1,304	1,246	1,117
1986	80	1,698	130	52	1,906	1,176	730	640
Vegetable:								
1985	27	8,282	135	24	8,583	3,606	4,976	4,463
1986	27	8,303	137	40	8,632	3,357	5,275	4,623
Fruit/nut:								
1985	75	6,749	31	22	6,939	4,761	2,178	1,953
1986	73	6,769	31	31	6,949	4,412	2,538	2,224
Nursery/ greenhouse:								
1985	26	5,469	2	0	5,507	1,992	3,515	3,152
1986	25	5,746	2	0	5,787	1,847	3,940	3,453
General crop: 3/								
1985	193	7,689	765	424	9,205	8,073	1,132	1,015
1986	188	7,073	777	695	8,853	7,259	1,594	1,397
Cash grain4/								
1985	137	9,339	2,272	1,295	13,199	9,155	4,044	3,627
1986	134	7,212	2,357	2,007	11,852	8,147	3,705	3,247
Livestock farms:								
1985	1,364	8,105	65,167	2,226	78,779	59,231	19,548	17,532
1986	1,327	6,420	66,757	3,392	80,002	54,863	25,140	22,033
Dairy:								
1985	235	1,190	20,176	507	22,171	18,534	3,637	3,262
1986	229	953	19,911	734	21,800	16,889	5,011	4,392
Poultry:								
1985	28	87	10,422	11	10,696	3,225	7,471	6,700
1986	27	71	11,865	18	12,145	3,010	9,135	8,006
Cattle:								
1985	695	3,151	22,067	994	28,093	21,689	6,404	5,743
1986	677	2,469	22,204	1,543	28,192	20,502	7,690	6,740
Hog:								
1985	130	2,020	6,896	396	9,495	7,706	1,790	1,605
1986	127	1,609	7,434	627	9,847	7,020	2,826	2,477
Sheep:								
1985	30	93	418	24	582	655	-73	-65
1986	29	73	462	40	624	609	15	13
Red meat:								
1985	36	1,028	1,797	197	3,063	2,293	775	695
1986	35	810	1,871	294	3,018	2,095	923	809
Other livestock								
1985	209	535	3,382	97	4,673	5,129	-456	-409
1986	203	435	3,011	137	4,278	4,738	-460	-403

1/ Gross cash income equals the sum of cash receipts, direct payments, and farm-related income. 2/ Net cash income is gross cash income minus cash expenses. 3/ Farms with over 50 percent of total receipts from crops, although no single crop accounts for half of sales. 4/ Cash grain farms are those specializing in sorghum, barley, oats, or with more than half of their sales from a combination of wheat, rice, corn, or soybeans.

Poultry operations had the highest per farm earnings and the sharpest rate of growth in net cash income. Increased prices received, expanded output, and strong demand created upward pressure on income. Prices received for dairy products, the only livestock commodity group with lower prices, fell 2 percent. Reasons for the price decline included increased herd size and gains in milk output per cow. Cash receipts for dairy products were down slightly in 1986, but increased receipts from other enterprises on dairy farms, lower expenses, and higher payments produced a 37-percent increase in net cash income.

Characteristics of Farms by Size of Farm

Although the agricultural sector may be considered as a single unit, disaggregating the sector into size classes helps form a more comprehensive economic assessment. Production characteristics and income differ dramatically by size of operation. The most common way to measure size is by the value of gross sales, including commodities placed under CCC loan. Farms are grouped into sales classes, but the relationships between size and farm characteristics are actually continuous. Tables 9 and 10 show the major differences among farms of different sizes.

Many experts do not agree on how to translate sales classes into size labels, such as small, midsized, and large farms. This lack of agreement is based on annual variation in sales due to prices, weather, Government programs, yields, and inventorying practices, and on variations in the ability of commodity enterprises to generate net income (or value added) from sales.

The classification scheme used here views farms with sales below $40,000 as noncommercial, or small, farms. They constituted about 1.6 million of the 2.2 million farms in 1986. About 294,000 farms operated with sales of $40,000 to $99,999, and about 210,000 farms showed sales of $100,000 to $249,999. Both groups are often viewed as the midsized farms. Analysts consider farms with sales of $250,000 or more as large farms, of which 95,000 existed in 1986.

Small Farms

The Corn Belt has more farms of every size than any region. However, small farms represent the largest percentage of the farms in the four southern regions (fig. 5), especially Appalachia and the Southern Plains. The most common specialties (50 percent or more of sales) of small farms are beef, hog, or sheep production. About half of the farms have these specialties, and another 16 percent specialize in cash grains.

Small farms, although 73 percent of total farms, operate only 30 percent of the land, have under 10 percent of the sales, 16 percent of the cash expenses, and 3 percent of the sector's total net cash income from farming. Small farms earn an average $950 in net cash income from operating their farm business. The smallest of the farms in this group, farms with sales of $5,000 or less, had a negative average net cash in-

Figure 5--Regional comparisons of numbers of farms with sales of less than $40,000

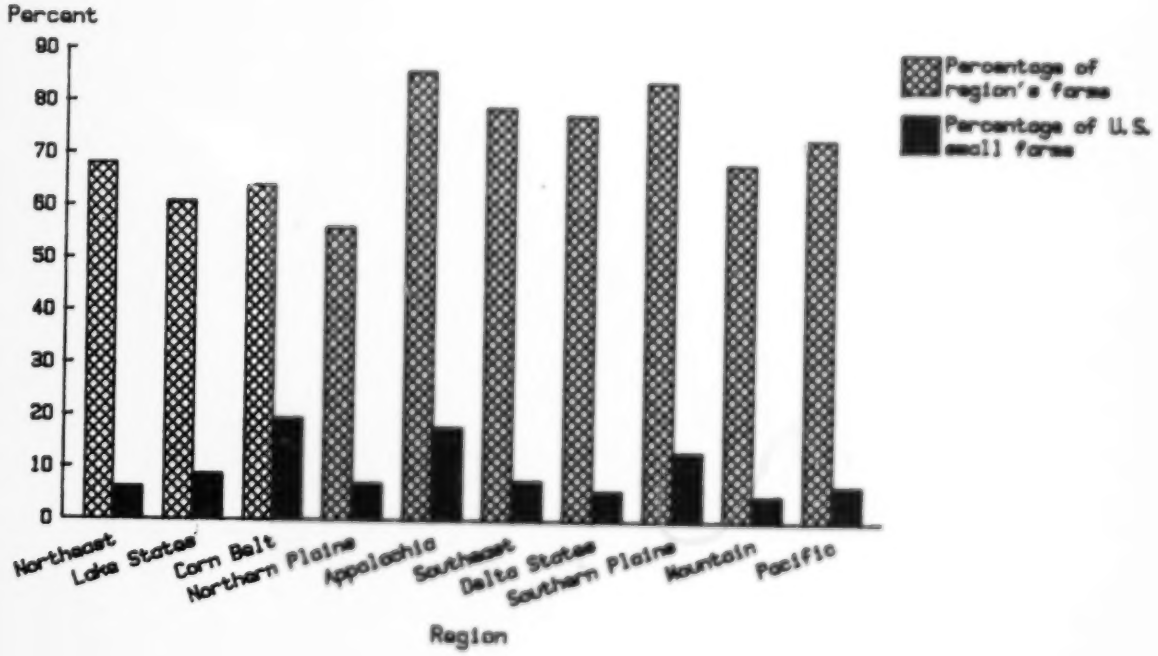


Table 9---Distribution of farms, farm and off-farm income, and expenses, by sales class, selected years, 1970-86

Item and year	Farm sales of-- $250,000 or more	$100,000 to $249,999	$40,000 to $99,999	Less than $40,000	All farms
			Percent		
Farms: 1/					
1985	4.1	9.7	14.2	72.0	100.0
1986	4.3	9.5	13.3	72.9	100.0
Land in farms:					
1982 2/	22.5	23.8	22.9	30.8	100.0
1986 1/	23.7	25.8	20.4	30.1	100.0
Gross farm income:					
1985	47.3	25.3	16.1	11.3	100.0
1986	50.1	24.0	14.7	11.2	100.0
Cash expenses:					
1985	42.4	24.7	17.0	15.9	100.0
1986	45.8	23.4	15.3	15.5	100.0
Net cash income:					
1985	58.2	26.7	14.1	1.0	100.0
1986	58.5	24.9	13.6	3.0	100.0
Off-farm income:					
1985	3.4	6.5	10.8	79.3	100.0
1986	3.7	5.9	9.1	81.3	100.0

1/ Source: U.S. Department of Agriculture, Agricultural Statistics Board, National Agricultural Statistics Service, Crop Production, August 1986-87.
2/ Source: U.S. Department of Commerce, Bureau of Census, Census of Agriculture, 1982, April 1984.

Table 10--Commodity sales (including the value of net CCC loans), by value of sales class, 1986

Commodity	Farm sales of-- $250,000 or more	$100,000 to $249,999	$40,000 to $99,999	Less than $40,000	All farms
			Million dollars		
Grains	10,134	10,435	6,678	3,851	31,099
Cotton and cottonseed	2,004	835	260	121	2,820
Tobacco	334	470	429	685	1,918
Vegetables and melons	5,798	639	330	332	7,099
Fruits, nuts, berries	4,712	1,036	630	515	6,893
Nursery and greenhouse products	4,486	678	327	265	5,766
Hay and silage	870	507	406	3,496	3,530
Other crops	3,798	886	412	183	5,379
Poultry and poultry products	9,542	2,483	526	127	12,678
Dairy products	6,640	6,377	3,961	846	17,824
Cattle and calves	18,137	4,180	2,816	3,757	28,890
Hogs and pigs	3,882	3,210	1,615	885	9,702
Sheep, lambs, wool	257	95	71	116	539
Other livestock	1,644	270	192	372	1,878
All commodities	71,846	31,802	18,652	12,716	135,116

come from farming. About two-thirds of all small farms had a negative net cash income from farming.

Small farms relied most on off-farm income. More than half of the operators had a major occupation other than farming. They received over 80 percent of the off-farm income received by all farm operator households in 1986, and their average off-farm income was about $22,500. Small farms were more likely than larger farms to be located in metro counties or in counties adjacent to metro areas where there was greater access to off-farm employment.[1] Despite relatively high average off-farm incomes, nearly a third of small farms were below the official poverty line.[2] About 7 percent of small farm households were financially vulnerable (debt/asset ratio more than 0.40 and cash income from farm and off-farm sources which did not cover their business and household expenses). Another 40 percent had a secure debt/asset ratio (0.40 or less), but their total cash income was not sufficient to cover business and household expenses.

Midsized Farms

The smaller farms of the group ($40,000-$99,999) are heavily concentrated in the Midwest: Corn Belt, Lake States, and Northern Plains. They represent high percentages of farms in these regions (fig. 6). About one-third of the farms with sales of $40,000 to $99,999 specialize in cash grains. Beef, hog, sheep, and dairy are also common specialties.

The larger midsized farms ($100,000 to $249,999 in sales) are also heavily concentrated in the Midwest, although the Corn Belt has nearly twice as many in this size class as any other region (fig. 7). These farms make up over 10 percent of the farms in the Northeast and Mountain regions. The larger midsized farms have about the same commodity specialty distribution as the smaller midsized ones. An important difference between these two groups of midsized farms is that constant dollar sales class data for 1974-82 indicated that the smaller midsized farms have constituted a declining proportion of farms in this class. But, the number of farms with sales of $100,000 or more has been generally stable.

In 1986, smaller midsized farms earned about $23,750 from their farm in net cash income, and larger midsized farms averaged about $61,650. Together they accounted for 23 percent of farms, 46 percent of the land in farms, 37 percent of agricultural sales, and 39 percent of the net cash income of the sector. However, they received only 15 percent of the off-farm income of all farm operator households. Their average off-farm income of about $13,000 was the lowest of all size groups, consistent with approximately 85 percent of farm operators reporting their major occupation as farming in 1986. This dependence on income from farming, along with operators and their households supplying the majority of farm labor requirements, are reasons why this group is often viewed as "family farms." Their net cash farm income was significantly higher on average than smaller farms', but almost as many operator households in the midsized group were below the official poverty level in 1986 (30 percent) because of relatively low off-farm employment.

About 17 percent of midsized farm households were in vulnerable financial positions in 1986, because their debt/asset ratios exceeded 0.40 and total cash income failed to cover business and household cash requirements. Their joint leverage-income position was similar to large farms and quite different from the low-income, low-leverage positions of small farms.

Large Farms

Most large farms are in the Corn Belt (fig. 8). The Pacific and the Mountain regions have more large farms as a percentage of their total farms than any other region. The large farms in the Pacific region are concentrated in California. Still, large farms are less than 10 percent of the total farms in the West. The Southeast and the Delta stand out from the other southern regions, the Southern Plains and Appalachia, in having a relatively large proportion of large farms. The major specialties of the large farms are beef, hogs, and sheep (24 percent), cash grains (22 percent), and dairy (15 percent).

Large farms, at 4.3 percent of all farms, accounted for nearly a quarter of the gross cash income and more than half of the net cash income, while operating 24 percent of the acres in farms. However, many of these large farms were high-value (vegetable production) or capital-intensive (dairy) with relatively low land requirements. They received less than 4 percent of the off-farm income, averaging $17,600 per household. Farm operator households associated with large farms had the lowest poverty rate of all farm sizes. However, 20 percent of these farms fell below the poverty line in 1986, compared with 13.6 percent of the total population. About 38 percent of the large farms had debt/asset ratios of 0.40 or more, and about 40 percent of the households associated with these high-leverage farms did not generate enough cash income from farm and off-farm sources to cover both business and household expenses.

Off-farm Sources of Income

USDA defines off-farm income as income received by farm operators and their households from nonfarm wages and salary jobs, wages and salaries earned on other farms, nonfarm businesses and professional income, interest and dividends, and all other cash nonfarm income. Off-farm income, a factor which affects the well-being of farm operator households, varies considerably by size and type of farm. Farm operator households have become increasingly dependent on off-farm income because of severe financial stress in

[1]Metro counties are counties with a city of 50,000 people, or with a Census Bureau-defined urbanized area of at least 50,000, and with a total metro population of 100,000 (or, in New England, of 75,000). Counties that are contiguous to metro counties and with strong commuting ties to metro counties are classified as metro rather than nonmetro.

[2]The poverty line is an estimate of the minimum income level necessary to cover essential living expenses, defined by size of family and, for one- or two-person families, by age. In 1986, the poverty threshold for a family of four was $11,200.

Figure 6--Regional comparisons of numbers of farms with sales of $40,000 to $99,999

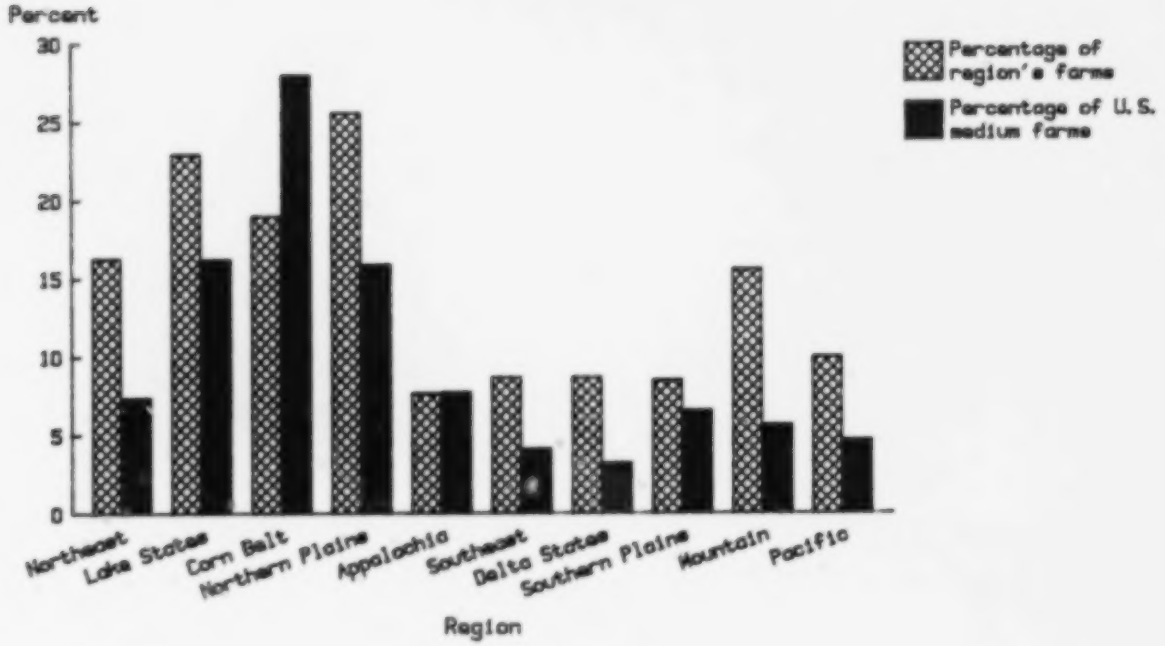
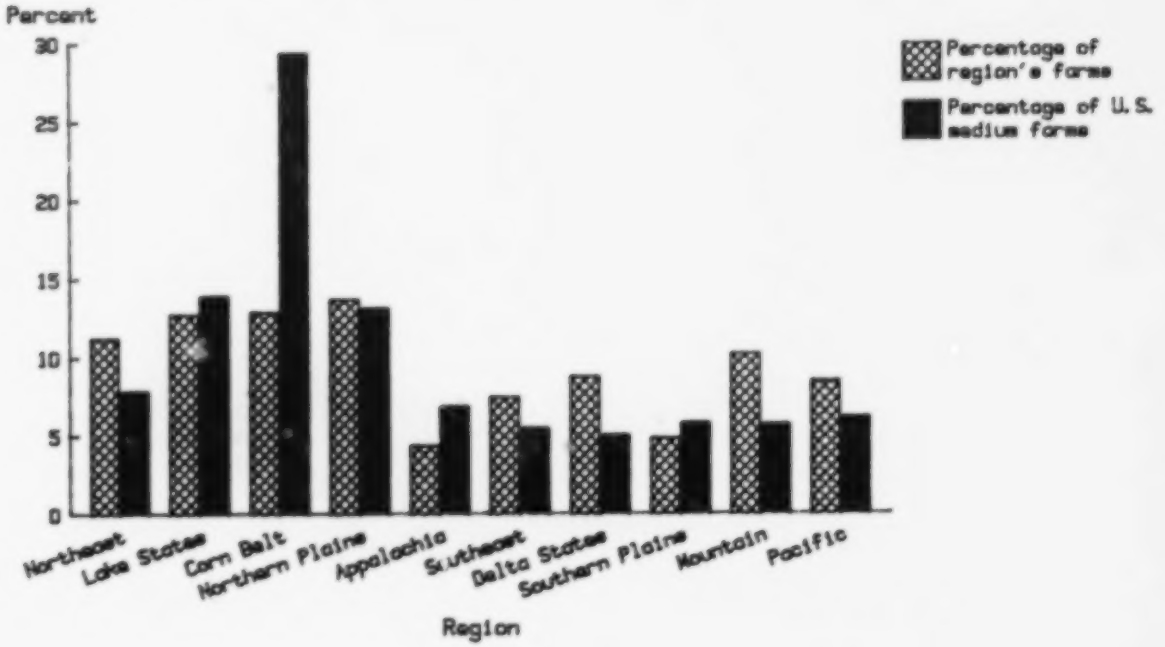


Figure 7--Regional comparisons of numbers of farms with sales of $100,000 to $249,999



the farm sector in terms of deteriorating cashflow positions and declining farm equity. Most off-farm income of farm operator households is from nonfarm wage and salary jobs. Wage and salary jobs provide a more constant and less risky source of income than does farm income.

Off-farm income was about 46 percent of the total cash income available to farm operators and their households, averaging $20,212 per farm operator household (fig. 9). The average for all farms ranged between $12,600 and $22,500. Off-farm income as a percentage of total cash income varied greatly by farm sales class: 96 percent of the income of the small farms, 37 percent for farms with $40,000 to $99,999 in sales, 17 percent for farms with $100,000 to $249,999 in sales, and 5 percent for farms with $250,000 or more in sales (fig. 10).

Off-farm income also varied by region, both on average and as a percentage of total cash income of farm operator households in the region. Six of 10 regions had average off-farm incomes above $20,000 in 1986: Southern Plains ($25,410), Pacific ($25,000), Southeast ($24,600), Northeast ($23,090), Delta ($21,280), and Mountain ($20,310). The four regions with average off-farm incomes below $20,000 were the Corn Belt ($19,070), Appalachia ($18,930), Lake States ($15,090), and Northern Plains ($13,770).

For most regions, the higher the average off-farm income was, the greater the proportion off-farm income was of total cash income. Heavy reliance on off-farm sources of income could result from very low average farm income or from good local off-farm opportunities and the ability to pursue them. Relatively low average off-farm income nonetheless translated into off-farm income accounting for over 60 percent of Appalachia's total cash income of farm operator households. The Pacific region had relatively high average off-farm income, which still accounted for only 35 percent of the total cash income of farm operator households because farm incomes were even higher.

Wide variations marked the total farm and off-farm income of all farm operator households by State (fig. 11). Parts of the Midwest were most dependent on their farming operation, rather than off-farm earnings, for their living. Farm operator households in North Dakota, South Dakota, Iowa, Minnesota, and Nebraska as a group received less than 35 percent of their total cash income from off-farm sources. These States had relatively low off-farm income per farm.

California and Arizona, characterized by large farms, earned a large portion of their income from farm sources. The presence of these large income-generating farms likely masked how much individual farm operator households were dependent on off-farm sources of income. Average off-farm income in California and Arizona exceeded $29,000 per farm operator household. The degree of dependence on off-farm income varied greatly in other Western and Southern States. The States most dependent on off-farm income were largely in the South: West Virginia, Virginia, South Carolina, Tennessee, Louisiana, Mississippi, Kentucky, and

Figure 8--Regional comparisons of numbers of farms with sales of $250,000 or more

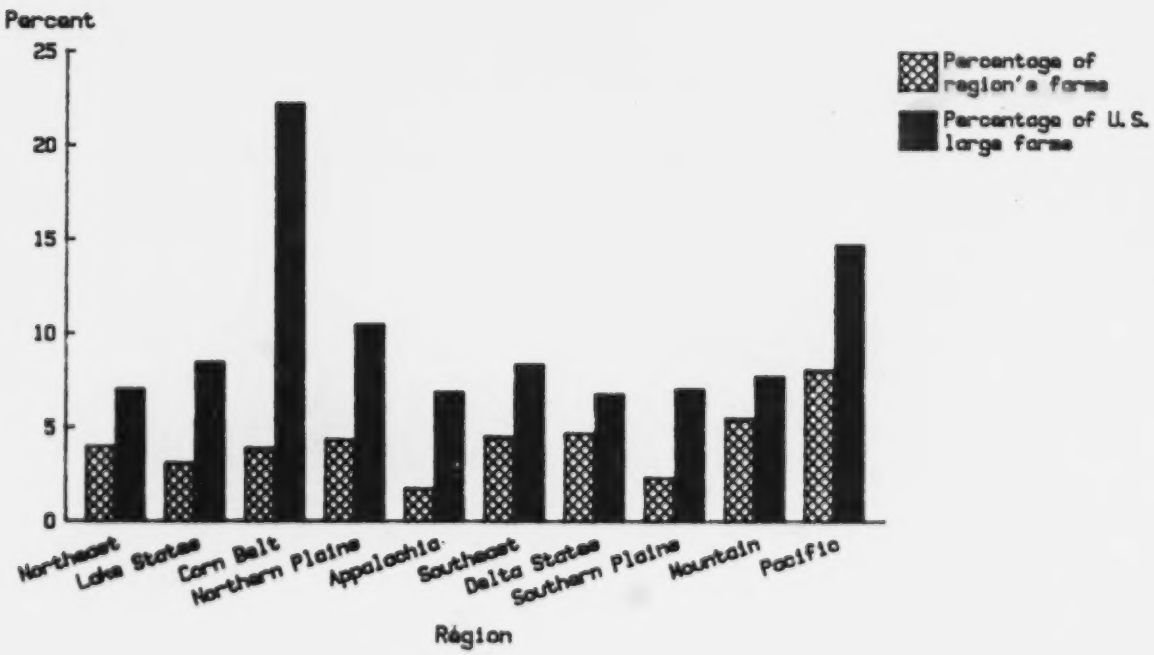


Figure 9--Average off-farm income, by sales class, 1986

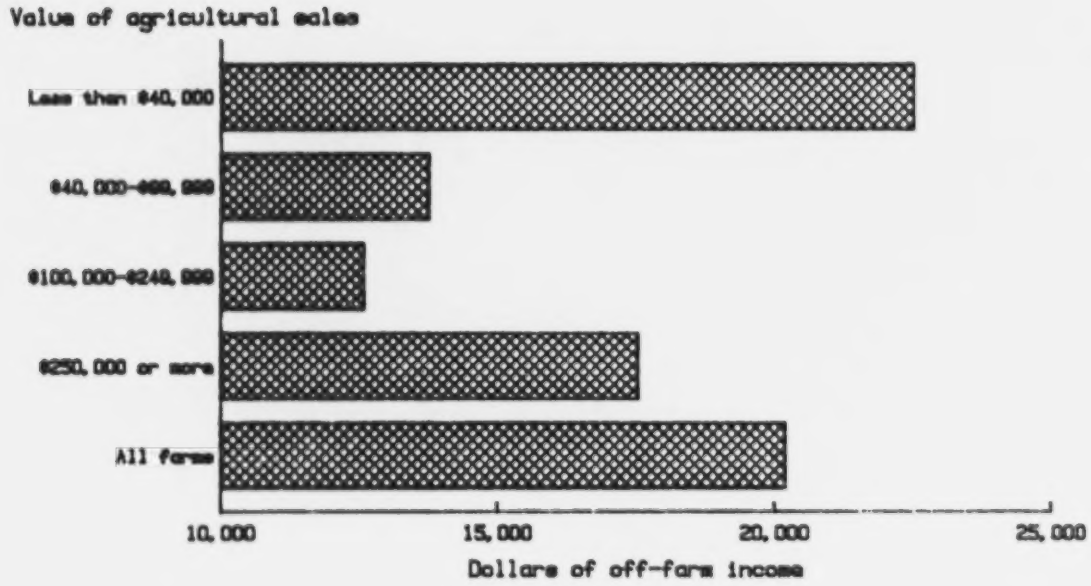
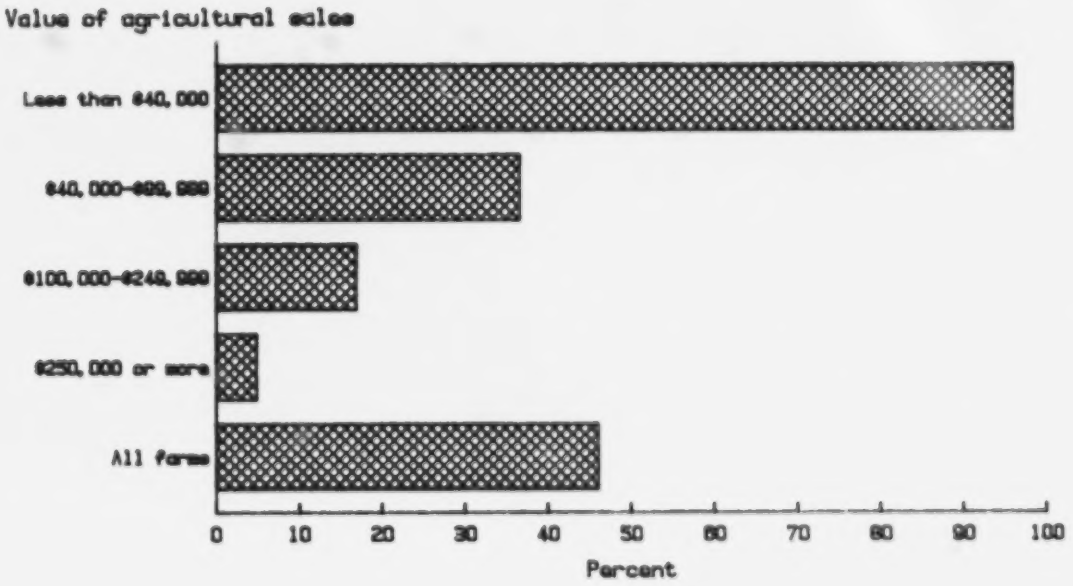
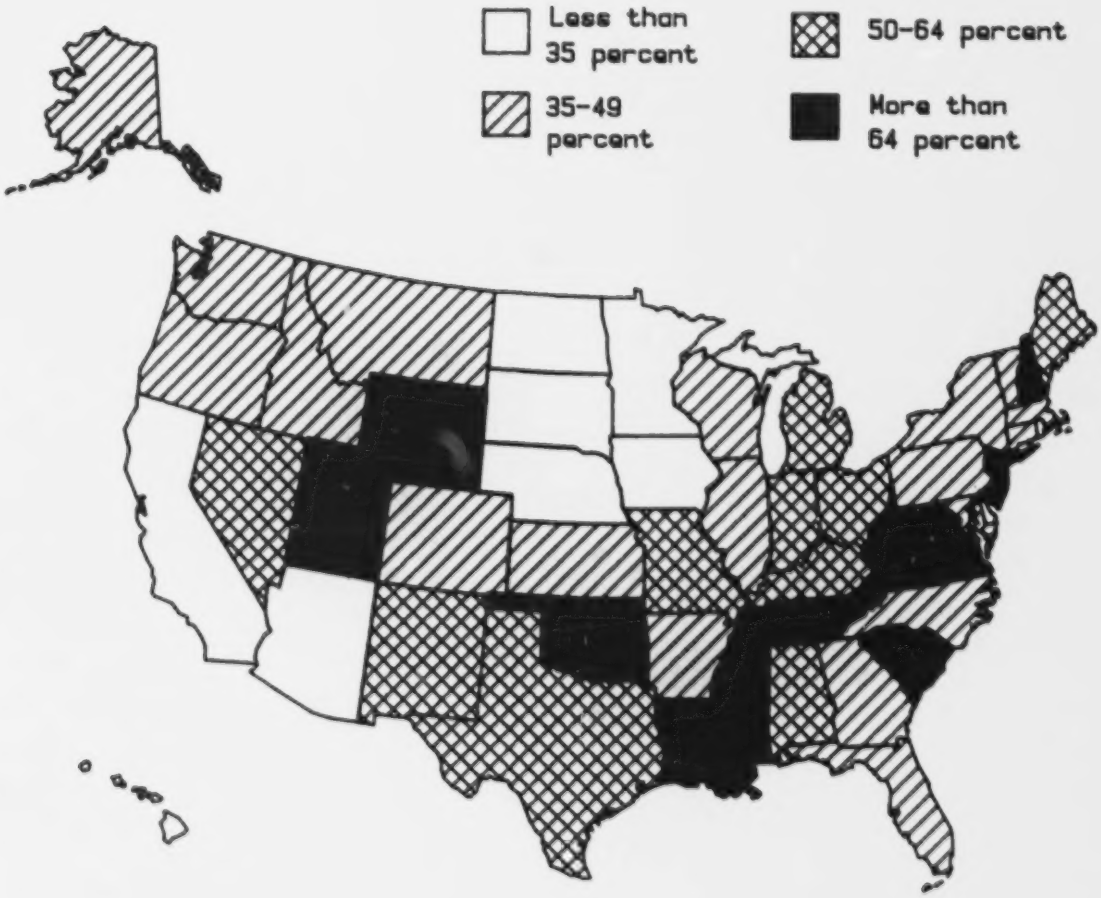


Figure 10--Off-farm income as a percentage of total cash household income, by sales class, 1986



Oklahoma. Wyoming actually had the highest income from off-farm sources as a percentage of total cash income because it was the only State to have a negative net cash income from farming in 1986. Farm operators in Utah, New Jersey, and New Hampshire also had high proportions of off-farm sources to total cash income.

Figure 11--Off-farm income as percentage of total 1986 income, by State 1/



1/ Total income equals net cash income plus off-farm income. Off-farm income is defined as the income received by farm operators and their households from nonfarm wages and salary jobs, wages and salaries earned on other farms, nonfarm businesses and professional income, interest and dividends, and all other cash nonfarm income.

GOVERNMENT SUPPORT TO AGRICULTURE

While the past few years have been marked by falling crop prices, sluggish exports, and weak marketing receipts, direct Federal payments have buoyed sector earnings. Despite weak prices and substantial reductions in acres planted of program commodities, gross farm revenue has risen sharply largely due to record-large levels of direct Government payments (fig. 12). Had price and income support payments remained at early 1980's levels, sector income and financial performance would have been much weaker. Payments received by farms of different types in 1985-86 are shown in figure 13.

Income-Stabilizing Effects of Federal Farm Payments

Participation rates in voluntary commodity programs rose appreciably in 1986. Farmers enrolled in commodity programs to gain protection from the large anticipated drops in market prices. Enrollment by corn farmers increased the most, with 84 percent of the base acres placed under program control, up from 71 percent in 1985. Wheat farmers enrolled 84 percent of their base acreage, up from 73 percent. Enrollment of cotton acres rose to 90 percent from 83 percent in 1985. Rice farmers, already very strong participants in farm programs, increased enrollment to 92 percent of base acres, up from 89 percent. Rice producers did this despite the seemingly stringent requirement to place 35 percent of the base acres into unpaid Acreage Reduction Programs (ARP). In 1985, only 20 percent was required to be placed in ARP, while paid land diversion enticed an additional 15 percent out of production. Record participation in Federal programs is likely to continue, although target prices and per unit deficiency payments are scheduled for further reduction.

Total direct Federal payments in support of the farm sector rose roughly 50 percent during calendar 1986, pushing payments to a record $11.8 billion (table 11). Total budget outlays to agriculture, which include both recoverable and nonrecoverable payments, increased much less than the nonrecoverable portion (mostly direct payments) because net CCC loans declined $3.5 billion from the level at the end of 1985. Recoverable payments usually take the form of loans, with commodities as collateral. Often, the loan is not repaid in cash, but the collateral is forfeited.

Two new policy instruments, marketing loans and generic commodity certificates, were key contributors to growth in calendar year 1986 direct payments. Both of these innovative policy tools move commodities out of Government storage and improve U.S. price competitiveness by boosting sales to foreign markets. Combined issuances of these loans and certificates added over $3.5 billion to 1986 direct payments. Losses in receipts, probably from weakening market prices, were offset by growth in deficiency payments. Deficiency payments for feed grains doubled in 1986 after rising more than ninefold in 1985. Deficiency payments, which accounted for over half of all direct, nonrecoverable Government outlays, rose nearly $4 billion, and diversion payments declined nearly $850 million last year.

Conservation Reserve Payments

Benefits have been passed on to farm operators through cost savings associated with conservation-oriented features of the 1985 farm act, which stipulates, as before, that eligibility requires idling a specified portion of base acreage in Acreage Reduction Programs. The 1985 farm act also contains a long-term land retirement option, the Conservation Reserve Program, which idles highly erodible land through 10-year contracts by offering annual rental payments plus a one-time cost-sharing to assist in establishing a permanent cover. In 1986, the new program's initial year, the goal was to idle 5 million acres. The overall objective is to retire 40-45 million acres by 1990. Annual rental payment bids averaged $46 per acre through 1986. By the end of 1987, accepted bids will likely have been ahead of the target, suggesting that the program will add considerably to Federal support costs. Nearly $114 million of rental payments were issued in calendar year 1986.

State Distribution

The distribution of payments, by State, approached the 1985 level (table 12). Ten States received 63 percent of the $11.8-billion total program payments, continuing the trend of 60-70 percent of total payments received during the past few years. These States produce most of the major program commodities, such as corn, wheat, and cotton. Some shifts occurred among the top 10 States in 1986 as corn deficiency payments propelled Iowa into the top berth, with 10 percent of total U.S. direct payments. Feed grain subsidies accounted for 88 percent of Iowa's direct payments.

Texas, which had been the top payment recipient since 1978, was second with 8 percent of the total payments. Texas is a well-diversified agricultural State, with cotton furnishing most of the Federal payments, 41 percent of total direct subsidies, which was 38 percent of all U.S. direct cotton payments. Texas also received a U.S. high of 30 percent of wool subsidies, 13 percent of rice payments, 6 percent of wheat and dairy termination payments, and 3 percent of feed grain payments. The top States in other major programs were Arkansas with 42 percent of rice payments, Kansas with 17 percent of wheat payments, and California with 18 percent of dairy termination payments.

Direct Government Payments by Sales Class

Total direct Government payments that flow to different sales classes of farms and the average payment per farm varied dramatically by farm size, mainly because payments were generally based on the volume of production. Most farm programs apply to specific commodities, so another source of unequal payment distribution arises from the dis-

Figure 12--Net cash income and Government payments, 1980-86

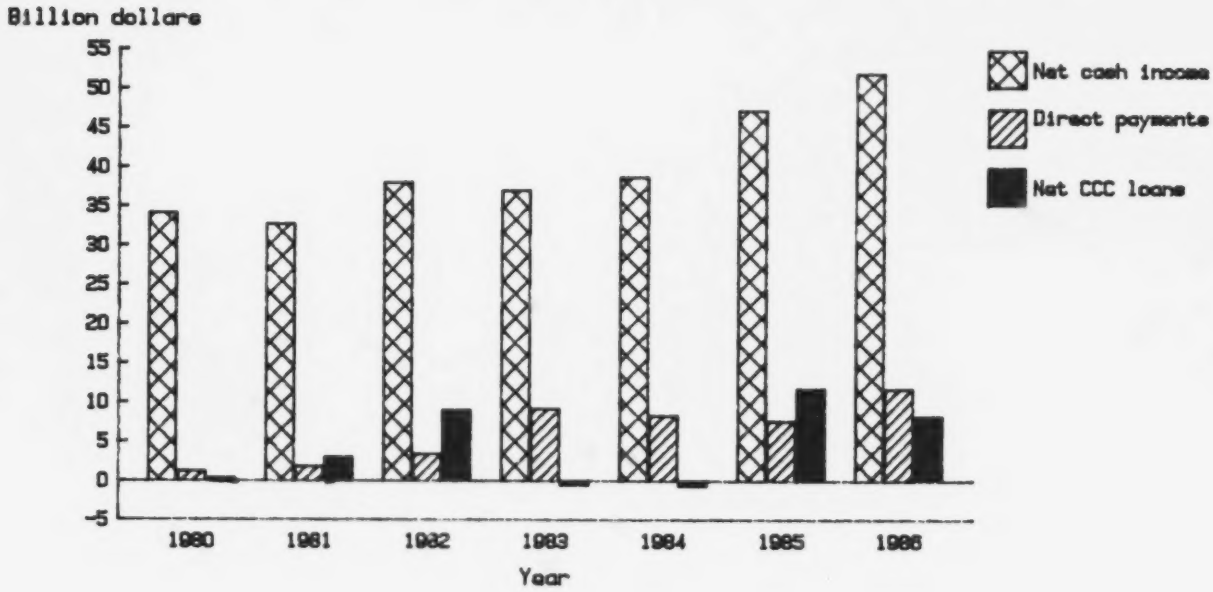


Figure 13--Direct Government payments per farm, by type of farm, 1985-86

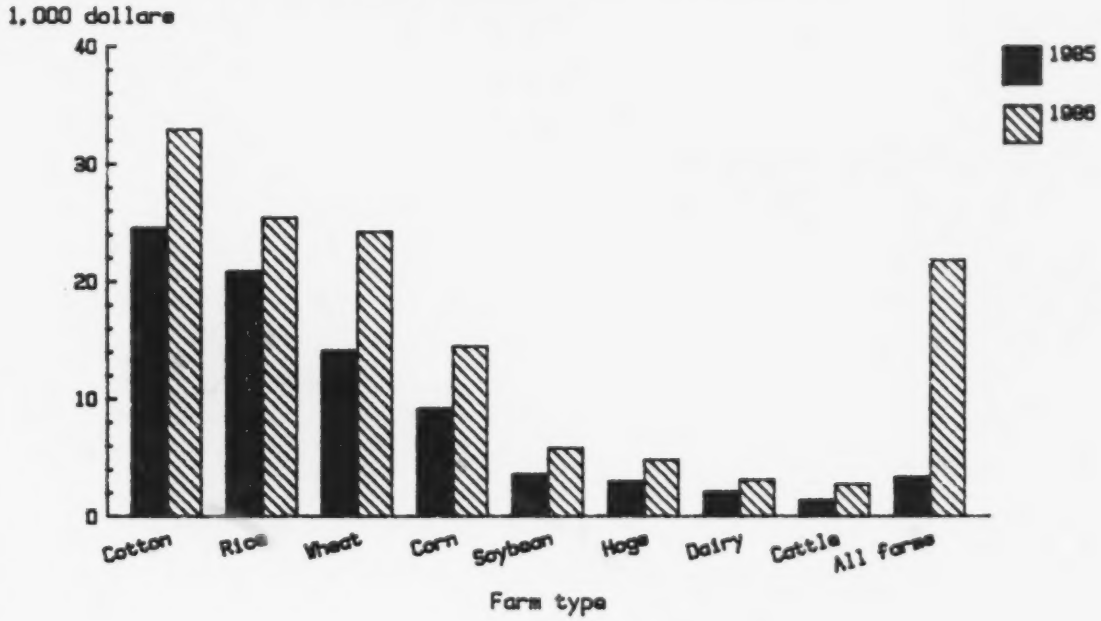


Table 11--Selected recoverable and nonrecoverable Government outlays to the farm sector, calendar years 1981-86

Item	1981	1982	1983	1984	1985	1986
			Million dollars			
Nonrecoverable payments 1/ (direct Government payments):						
Deficiency payments--						
Wheat	393	633	618	1,202	1,363	1,633
Rice	*	156	260	171	502	365
Feed grains	45	529	461	296	2,828	3,593
Upland cotton	0	683	588	250	938	883
Subtotal	439	2,001	1,927	1,918	5,631	6,473
Diversion payments--						
Wheat	0	0	245	592	587	-1
Rice	0	0	18	21	75	1
Feed grains	*	137	883	71	1	18
Upland cotton	*	2	2	24	168	3
Milk 2/	0	0	0	539	429	*
Subtotal	*	139	1,148	1,244	1,259	23
Disaster payments--						
Wheat	231	19	1	*	0	0
Rice	2	*	*	0	0	0
Feed grain	198	47	2	*	0	0
Cotton	222	115	72	1	0	0
Subtotal	653	182	75	1	0	*
Reserve storage payments--						
Wheat	126	274	266	202	168	175
Corn	107	522	174	60	159	398
Sorghum grain	33	93	45	44	28	27
Barley	3	19	21	27	25	33
Oats	*	1	1	*	*	1
Unallocated 3/	41	0	48	88	*	*
Subtotal	310	907	555	421	380	633
Dairy termination	0	0	0	0	0	621
Conservation Reserve rental	0	0	0	0	0	83
Other programs 5/	531	263	348	386	306	374
Value of PIK 4/	0	0	5,242	4,459	91	3,361
Total	1,932	3,492	4,053	3,971	7,667	11,813
Offset PIK redemptions 6/	n/a	n/a	1,773	2,361	91	n/a
Recoverable payments: 1/						
Net CCC loan values-- 7/, 8/						
Wheat	1,066	1,977	1,004	74	2,301	665
Rice and rye	-7	439	-14	193	342	258
Corn	995	3,759	-212	-1,088	5,135	5,956
Sorghum, barley, oats	422	770	94	-20	911	731
Soybeans	449	1,060	-1,332	492	1,902	617
All cotton	158	1,076	-289	-468	1,224	81
Total	3,081	9,081	-749	-816	11,814	8,308
CCC dairy purchase costs 9/	1,830	2,089	2,107	1,560	1,875	1,825
Total 10/	6,843	14,662	10,654	9,175	21,532	21,950

*=Less than $500,000.
n/a=not applicable.
1/ 1986 data include marketing certificates and cash. 2/ Financed through producer contributions with the 50-cent deduction not included as an offset. 3/ Includes PIK storage costs for 1983-85. 4/ PIK quantities valued at original loan rates and includes certificates issued. 5/ Includes wool price supports, various agricultural conservation programs, and other miscellaneous programs. 6/ Included to offset loan redemptions with PIK certificates, which are not true redemptions. 7/ Includes regular and reserve nonrecourse loans. 8/ Negative amounts denote net withdrawals from CCC. 9/ Estimated calendar year data, excluding proceeds from CCC sales and transfers. 10/ Excludes any other non-CCC aid.

tribution of program commodity production by sales class. General market conditions for program commodities in a particular year also affect the distribution of payments among sales classes.

The total payments and the per farm average increased for each sales class (table 13). The average direct Government payment was $5,341, an increase of nearly $2,000 per farm from 1985. The sales class average ranged from $350 for farms with sales under $10,000 to $36,000 for farms with $500,000 or more in sales. Nearly 24 percent of the $11.8 billion in direct payments in 1986 went to farms with sales of $250,000 or more. These large farms were about 4 percent of all U.S. farms, and received the lowest percentage of direct payments since 1982. The rate of change per farm between 1985 and 1986 decreased as farm size increased. Farms with sales under $20,000 more than doubled their payments per farm, while the average of farms with sales over $500,000 increased 12 percent.

Generic Commodity Certificates

Several provisions of the Food Security Act of 1985 allow domestic prices for program commodities to reflect more closely world supply and demand conditions. These provisions permit reductions in loan rates through 1990/91, implementation of marketing loans and export promotions, and issuance of generic commodity certificates to program participants in lieu of cash payments. Generic commodity certificates, first issued in the spring of 1986, have been popular because they:

- Allow holders of certificates to acquire program commodities (wheat, rice, rye, corn, grain sorghum, barley, oats, soybeans, cotton, honey, and dairy products) that are either owned by CCC or that had been pledged as collateral for 9-month loans or for participation in the Farmer-Owned Reserve (FOR) or Special Producer Storage Loan Program (SPSLP) when prices are below

Table 12--Direct Government payments and net Commodity Credit Corporation loans, 10 major States, 1982-86

State/item 1/	1982	1983	1984	1985	1986
			Million dollars		
Iowa:					
Direct payments	215.9	925.9	742.8	691.1	1,161.2
Net CCC loans	1,134.6	-142.0	-116.5	1,610.7	1,800.2
Total	1,350.5	783.9	626.3	2,301.8	2,961.2
Texas:					
Direct payments	643.6	1,129.9	782.4	848.1	978.4
Net CCC loans	944.0	.8	-237.8	857.5	221.1
Total	1,587.6	1,130.7	544.6	1,705.6	1,199.5
Illinois:					
Direct payments	118.2	560.4	543.2	491.5	882.5
Net CCC loans	665.2	-200.3	-92.1	1,578.4	1,230.8
Total	783.4	360.1	451.1	2,069.9	2,113.3
Kansas:					
Direct payments	280.3	606.9	573.9	482.2	870.8
Net CCC loans	635.5	202.8	-95.4	798.7	481.5
Total	915.8	809.7	478.5	1,280.9	1,352.3
Nebraska:					
Direct payments	277.5	786.8	533.0	518.4	867.8
Net CCC loans	1,033.5	16.8	-192.2	923.3	1,065.0
Total	1,311.0	803.6	340.8	1,441.7	1,932.8
Minnesota:					
Direct payments	182.9	611.7	529.9	480.1	802.4
Net CCC loans	750.7	-196.8	28.9	1,025.8	1,004.1
Total	933.6	414.9	558.8	1,505.9	1,806.5
North Dakota:					
Direct payments	200.2	558.4	463.2	483.7	700.2
Net CCC loans	507.6	140.4	12.4	517.4	169.8
Total	707.8	698.8	475.6	1,001.1	870.0
Indiana:					
Direct payments	57.5	274.2	308.8	218.3	411.3
Net CCC loans	293.1	-122.3	-19.8	607.2	422.0
Total	350.6	151.9	289.0	825.5	833.3
Oklahoma:					
Direct payments	127.7	351.7	309.4	249.5	393.0
Net CCC loans	262.1	114.8	56.6	312.4	99.2
Total	389.8	466.5	366.0	561.9	492.2
California:					
Direct payments	134.5	352.6	335.3	301.5	387.9
Net CCC loans	310.2	-144.7	46.6	188.5	121.6
Total	444.7	207.9	381.9	490.0	509.5

1/ Ranking based on 1986 direct payment levels.

loan rates. These stocks normally would be available to the market only when farm prices are above support levels sufficient to trigger their release.

- Are issued in fixed dollar amounts, and therefore, protect farmers from declines in prices. When farm prices fall, posted county prices (PCP's) drop as well, increasing the amount of commodity for which certificates can be exchanged.

- Increase marketing flexibility, enhance marketing opportunities, and protect income for holders.

- Can easily be sold or transferred. An active market exists nationally for certificates.

- Can be returned to CCC at face value for cash only by original holders during the sixth through eighth months of the 8-month life of the certificates. Those issued through 1986 programs were subject to a 4.3-percent Gramm-Rudman-Hollings reduction if returned to CCC for cash.

Certificates worth $3.85 billion were issued in 1986. About 94 percent of the certificates were issued to farmers as partial advance payment for participation in 1986 acreage reduction and paid diversion programs. Wheat program participants received about half of the total issuances and corn participants, one-third. In addition, $238 million was issued to grain merchants, ethanol producers, and farmers.

A total of $1.94 billion in certificates was exchanged for program commodities in 1986, with 80 percent exchanged for producer loan collateral and 20 percent for CCC-owned stocks. Farmers exchanged about $1.18 billion (61 percent) for corn and $486 million (25 percent) for wheat. Nearly all of the corn exchanges and 75 percent of the wheat exchanges came from producer loans.

When farmers exchange certificates for commodities pledged as collateral for 9-month loans, interest expenses that would have been charged upon loan repayment are dropped. If farmers store commodities at a commercial elevator, off-farm storage costs could add up to 26 cents a bushel for the full 9-month life of the loans. Thus, farmers who store loan collateral off-farm accrue the most benefit by exchanging certificates for loan collateral at the time of loan placement, commonly referred to as "Quick-PIK" exchanges.

How a producer chooses to use certificates depends on market conditions: farm prices, PCP's, loan rates, potential storage cost savings, and certificate premiums. If market prices and PCP's exceed the loan rate or are below it in percentage terms by less than the certificate premium, the producer would be better off selling certificates at the premium. The decision to sell the crop on the market or to place it under loan would depend only on the relationship between farm price and loan rate.

When farm prices and PCP's are below loan rates in percentage terms by more than the certificate premium, the relationship between potential storage cost savings and the premiums must be considered. If the per bushel storage cost as a percentage of the PCP is greater than the premium value, the farmer would gain by using certificates to reacquire part or all of the commodity under loan. However, if the per bushel storage cost as a percentage of the PCP is less than the premium, the farmer would be better off selling certificates for the premium. The farmer then would sell the crop or place it under loan depending only on the relationship between farm prices and the loan rate.

Table 13--Total and per farm direct Government payments, by value of sales class, 1975 and 1980-86

Year	Value of sales class						
	$500,000 and over	$250,000 to $499,999	$100,000 to $249,999	$40,000 to $99,999	$20,000 to $39,999	$10,000 to $19,000	Less than $10,000
	Million dollars						
1975	57	64	105	231	140	82	130
1980	91	195	282	414	146	59	98
1981	148	316	441	599	206	84	139
1982	293	387	1,005	1,065	355	146	241
1983	1,401	1,779	3,027	1,996	585	291	217
1984	984	1,445	3,122	1,899	569	236	176
1985	847	1,346	2,536	1,897	691	206	181
1986	1,059	1,734	3,844	3,056	1,242	474	404
	Dollars per farm						
1975	5,193	1,665	1,091	729	445	260	90
1980	3,849	2,412	1,700	1,169	521	206	79
1981	5,509	3,452	2,433	1,673	745	295	114
1982	9,829	6,160	4,341	2,986	1,330	527	205
1983	48,667	27,529	13,218	5,752	2,289	1,089	184
1984	35,594	21,899	13,851	5,655	2,343	922	150
1985	32,099	20,125	11,491	5,874	3,009	847	155
1986	35,998	26,403	18,294	10,387	5,558	2,003	351

Farmers usually exchange certificates for commodities pledged as loan collateral that have the lowest PCP. With annual per bushel storage costs roughly the same for wheat, feed grains, and soybeans, the total storage savings with certificates is greatest for commodities with lower PCP's because more bushels can be exchanged with a given dollar value of certificates.

Farmers can free storage capacity prior to harvest by exchanging certificates for old-crop commodities under loan, then selling the commodities. And, if the PCP in a given county is below the cash price, opportunities for arbitrage (exchanging and selling simultaneously to take advantage of the price differences) exist.

Certificates also have several advantages for merchants. Certificates issued through the Export Enhancement program and the Targeted Export Assistance program or purchased from others allow domestic merchants to compete more effectively with foreign exporters. Arbitrage opportunities also exist for merchants if the CCC redemption price at a given location is below the cash price. And, certificates are cheaper for merchants to hold than commodities are, so marketing costs for storing, handling, and transporting decline.

Because of these advantages, certificates sell at a premium to their face value. Certificates sold at an average premium of about 12 percent in 1986.

Certificates have their greatest effect on markets when prices are below loan rates, because many advantages to using certificates, particularly for farmers, exist only when PCP's are below loan rates. Certificates effectively circumvent the barrier to marketing crops provided by the loan programs when prices are below support levels.

When farm prices and PCP's are below loan rates, farmers can acquire and sell or use commodities that otherwise would have remained under loan and eventually been forfeited to the CCC. Some Quick-PIK exchanges release stocks that would have been placed and left under loan and eventually forfeited to CCC, especially when prices are below the loan rate minus 9 months' storage costs.

Although some Quick-PIK exchanges represent placements and acquisitions of commodities that otherwise would not have been placed, many of these exchanges release stocks that would have been placed and left under loan, especially when prices are below the net loan rate (loan minus 9 months' storage costs). When market prices are above the loan rate, advantages to farmers who use certificates diminish. The need for certificates declines because equilibrium prices and marketings of stocks under loan are not as constrained by the loan program. However, if world prices are significantly below domestic prices, then the need for certificates continues. When farm prices exceed the loan rate, exchanges for commodities which had been pledged as collateral for FOR or SPSLP loans or for CCC-owned stocks will free up supplies that otherwise would be unavailable to the market, and put downward pressure on prices.

When certificate exchanges free additional supplies, prices fall and use rises. However, the increase in use generally is not as large as the amount exchanged, so the difference is stored. Initially, free stocks rise, but larger free stocks in turn raise nonfree stocks by lowering prices of crops eligible for loan.

The effect of certificates on farm prices varies by crop-year quarter. As a rule, exchanges least affect commodity prices early in the crop year when prices are seasonally low, because free supplies are at seasonal highs following harvest. Free supplies then generally taper off over the rest of the crop year, resulting in stronger prices. Certificate exchanges during the fourth crop-year quarter will then have a greater effect than in earlier quarters because the amount of commodity exchanged will be larger relative to the initial level of free supplies.

Farm prices are typically lowest early in the crop year. Prices for corn in the June-August 1986 quarter would have been 10-20 cents a bushel higher without certificates than they actually were (table 14). Expectations of a large corn crop, the extended FOR rotation, and reduced loan rates already in place for wheat, barley, and oats pushed corn prices below the 1985 loan rate during the summer quarter of 1985/86. But, corn exchanges of 215 million bushels were an important additional factor that lowered farm prices. Corn exchanges likely reduced farm prices by 5 cents or less a bushel, because free supplies hit record levels last September-November (the harvest quarter).

The effect of exchanges on quarterly prices for wheat was much smaller. During June-August 1986 (the harvest quarter), prices were reduced only slightly because free supplies already were large. In September-November, wheat prices probably fell by 5-10 cents a bushel because of certificates.

Measurement of Governments' Intervention in Agriculture[3]

There are no free traders in the world. All governments intervene in their agricultural sectors. Only the extent of intervention varies, resulting in an uneven playing field for agricultural traders. The competitive positions of all countries participating in world agricultural trade are affected by trade barriers (quotas, tariffs, and variable levies), price and income support programs, and other domestic agricultural policies of trading countries. Trade policies insulate agriculture in many countries from world price

[3]From: Nicole Ballenger, John Dunmore, and Thomas Lederer, *Trade Liberalization in World Farm Markets*, AIB-516, and *Government Intervention in Agriculture: Measurement, Evaluation, and Implications for Trade Negotiations*, FAER-229, Economic Research Service, U.S. Department of Agriculture..

movements and international competition. These and other programs that discourage supply and demand adjustments can be costly to domestic taypayers and consumers and to foreign suppliers.

ERS recently measured worldwide government intervention in agriculture during the 1982-84 period using the producer subsidy equivalent concept (PSE). A PSE is an estimate of the revenue required to compensate producers if all existing government support programs were eliminated. The 1982-84 PSE's accounted for budget outlays that financed intervention and also included policies that did not result in specific outlays such as tariffs, import quotas and permits, and variable levies. PSE's did not measure foregone income attributed to acreage and supply controls or the effects of government policies on prices of intermediate products such as feed grains for livestock.

The calculated ranges of PSE's are weighted averages for 1982-84 (table 15). Each PSE was the ratio of the total value of policy transfers to producers of a particular commodity and the value of production (including any direct payments) of that commodity. For example, the PSE estimate for the Australian wheat sector indicated that the government's contribution to Australian wheat producers' revenue amounted to less than 10 percent of the value of Australian wheat production.

Japan maintained the highest levels of government assistance to producers. Border measures provided the major components of assistance. For example, Japanese beef imports, restricted by such border measures as quotas, tariffs, and surcharges, doubled domestic beef prices compared with world prices.

European Community (EC) assistance to farmers was in the moderate range (24-49 percent), except in the beef sector where the PSE exceeded 50 percent. EC governments used variable import levies and bought from producers at guaranteed prices that were often higher than world market prices.

U.S. support to producers of wheat, rice, corn, and dairy products was moderate, while support for barley, soybeans, and beef was low (0-24 percent). The Government's contribution, mostly import restrictions, exceeded 50 percent of production value for sugar producers. The Government supported most other commodity markets with direct cash payments or price supports, building Government inventories through the Commodity Credit Corporation.

Japan had the highest average PSE for all commodities, 72 percent, mainly because of high support to rice producers. The EC had the second highest average with most commodities' PSE's close to 33 percent. Support was 22-23 percent in the United States, Canada, and New Zealand. Australia had the lowest average level of producer support, 9 percent, among developed countries.

In the EC and Japan, most support costs were borne by consumers through higher food prices. Higher U.S. and Canadian retail prices supported dairy producers, while taxes supported wheat producers (figs. 14-15).

FINANCIAL PERFORMANCE

Economic conditions within the farm sector are analyzed from five distinct perspectives in this section. First, we describe the aggregate balance sheet, interest on debt, and

Table 14--Quarterly generic certificate activity and farm price effects

Commodity and item	1986			1987	
	June-August	September-November	Dec. 1986-Feb. 1987	March-May	June-August
			Million bushels		
Corn:					
Exchanges, from--	215	344	751	1,641	436
CCC inventory	39	24	14	45	40
Producer loans	176	320	737	1,596	396
			Cents per bushel		
Estimated farm price effects	-10 to -20	0 to -5	-10 to -20	-20 to -25	-20 to -25
			Million bushels		
Wheat:					
Exchanges, from--	77	88	70	241	60
CCC inventory	32	4	8	117	28
Producer loans	45	84	62	124	32
			Cents per bushel		
Estimated farm price effects	0 to -5	-5 to -10	0 to -5	-5 to -10	0 to -5

Table 15--Ranking of producer subsidy equivalent levels, selected trading partners, 1982-84

Commodity 1/	Producer subsidy equivalents 2/				
	0 - 0.09	0.10 - 0.24	0.25 - 0.49	0.50 - 0.74	0.75 - 0.99
Wheat 3/	Australia* New Zealand	Canada* European Community* South Africa	European Community* Mexico Nigeria United States*	Brazil South Korea Taiwan	Japan
Rice	Thailand*	Australia*	Brazil European Community Taiwan* United States*	South Korea	Japan
Corn	Canada European Community Nigeria		South Africa Taiwan United States*	Mexico South Korea	
Barley	Australia* New Zealand*	Canada* European Community* United States*		South Korea	Japan
Soybeans	Canada United States*	Taiwan	European Community Mexico	Japan South Korea	
Sugar		Australia* Taiwan*	Canada European Community*	Japan South Africa* United States	
Dairy products	Brazil	New Zealand*	Australia* European Community* Taiwan United States*	Canada* South Korea	Japan
Beef	Australia* Canada United States	New Zealand*	Taiwan	European Community* Japan South Korea	
Pork	Australia* Canada* Taiwan* United States	European Community*	South Korea	Japan	
Poultry	Australia* Brazil* United States	Canada South Korea Taiwan	European Community* Japan		

*=net exporter during 1982-84.

1/ Some products lack data for some years. 2/ Ratio of policy transfers to gross domestic value of production including direct government payments. 3/ The European Community supports durum wheat producers more than other (common) wheat producers.

Source: U.S. Department of Agriculture, Economic Research Service. Government Intervention in Agriculture: Measurement, Evaluation, and Implications for Trade Negotiations. FAER No.229, April 1987, p. 29.

Figure 14--Wheat producer subsidies from consumer prices and tax revenue, 1982-84

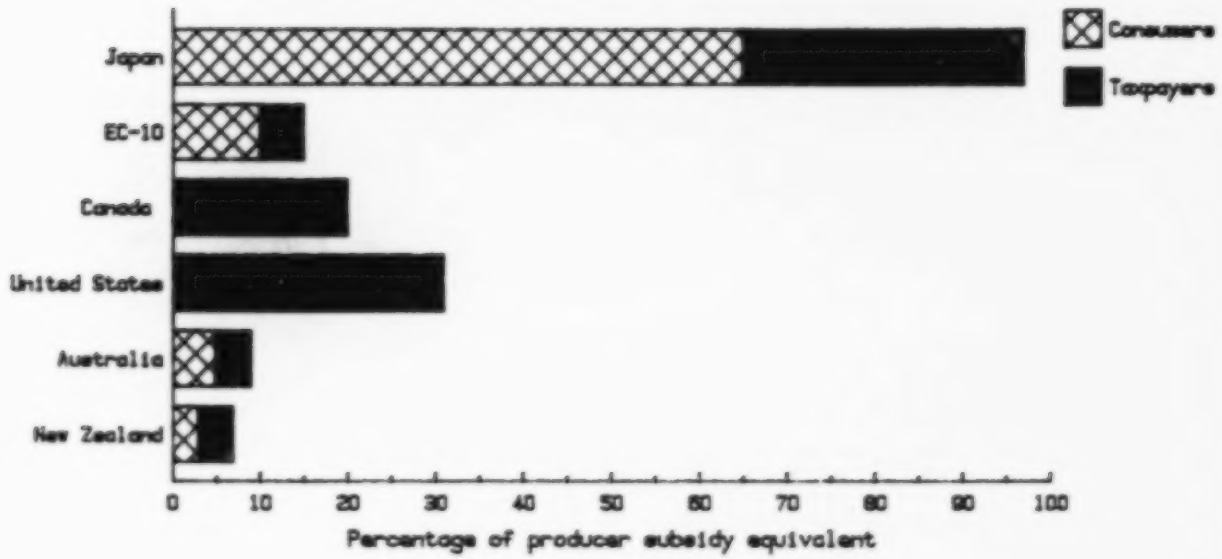
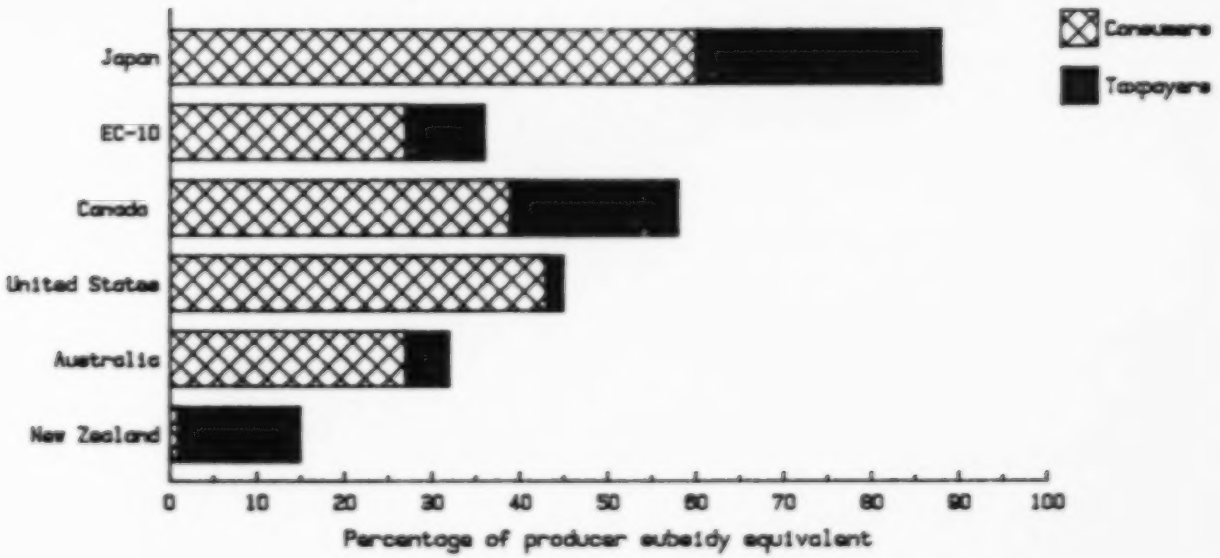


Figure 15--Dairy producer subsidies from consumer prices and tax revenue, 1982-84



debt distribution among lenders. Operator financial stress was analyzed based on whole-farm indebtedness and cash flow. Then we describe some potential and actual repercussions from the farm financial crisis among agricultural lenders.

Farm Sector Balance Sheet

Debt and asset positions are important indicators of the longrun financial health of the sector. The farm sector balance sheet estimates the current market value of total assets, debt (liabilities), and net worth (assets minus liabilities) as of December 31 of a calendar year. The farm sector may be either a business (excluding assets and liabilities of farm households) or a firm/household (including both farming and personal activities of farm households). Proprietors' equity, the difference between total farm assets and liabilities, approximates what the residual value of assets would be if all creditors were repaid.

Although nominal net income reached record levels in 1986, farm equity values continued to decline. Growth in farm equity during the 1970's (12-percent compound annual rate) provided the collateral base for much higher levels of debt. After peaking in 1980 at $926 billion, farm equity has declined each year reaching $621.6 billion in 1986, a 6-percent average annual rate of decline. Cumulative equity losses during 1980-86 exceeded $304 billion, which was 33 percent of the 1980 value of equity.

Nominal equity values fell about 6 percent during 1986, as the 7-percent decline in asset values outweighed the 15-percent decrease in outstanding debt (fig. 16). In constant (1982) dollars, equity declined 9 percent during 1986, marking the sixth consecutive year of real equity losses for the sector (fig. 17). Real equity has decreased 50 percent since peaking in 1980. The 9-percent real equity loss during 1986 presaged a slowing in the rate of decline, however, because real equity values had fallen by 15 percent in 1984 and 14 percent in 1985.

Most of the $41-billion decline in equity can be attributed to the continuing erosion of farm real estate asset values (table 16). The $48-billion decrease in real estate assets (including operator dwellings) was slightly offset by the $10-billion reduction in outstanding real estate debt. Still, the net loss of $38 billion in real estate equity accounted for over 93 percent of nominal equity loss. Farm real estate accounted for about 77 percent of the total value of farm assets in 1981 and 71 percent by the end of 1986. The value of farm real estate peaked in 1981 at $847 billion but fell at an annual compounded rate of 8.6 percent to $560 billion as of December 31, 1986. Nominal farmland values fell an unprecedented 13 percent in 1984 and 12.4 percent in 1985.

The value of total farm business and household assets dropped 8 percent during 1986 to $788 billion, following a 10-percent drop in 1985. Since peaking in 1981, the value of total assets has fallen $135 billion, 29 percent (in current dollars), 59 percent (in constant dollars). Declining asset values bespeak the sector's weakening financial position as loan-to-value ratios increase on existing loans, and shrinking security reduces potential credit capacity.

Nonreal estate asset values have declined continuously since 1980. They fell 4.2 percent in 1985 and 5.8 percent in 1986.

Table 16--Balance sheet of the farm sector (including farm households), calendar years 1981-86

Item	1981	1982	1983	1984	1985	1986	Change 1984-85	Change 1985-86
	Billion dollars						Percent	
Assets	1,103.1	1,066.6	1,050.9	947.2	850.4	788.4	-10.2	-7.3
Real estate	846.7	808.7	798.0	693.7	607.5	559.5	-8.7	-7.9
Nonreal estate	256.4	258.0	252.9	253.5	242.9	228.9	-4.2	-5.8
Livestock and poultry	53.5	53.0	48.7	49.6	46.3	47.6	-7.0	2.9
Machinery and vehicles	108.8	108.8	105.8	99.4	97.6	93.8	-1.8	-3.9
Stored crops	28.1	25.2	22.4	25.1	20.2	10.0	-19.5	-50.5
Household goods	20.8	23.0	24.4	26.1	26.1	26.8	0	2.7
Financial assets	45.1	48.0	50.6	53.1	52.7	50.8	-.8	-3.6
Liabilities	194.0	203.0	206.5	204.4	188.0	166.8	-8.6	-14.6
Real estate debt	105.8	111.3	113.7	112.4	105.8	95.8	-6.6	-11.7
Nonreal estate 1/	88.2	91.8	92.7	92.0	82.2	71.0	-13.6	-18.6
Total farm equity	909.1	863.6	844.4	742.8	662.5	621.6	-10.8	-6.2
Real equity 2/	867.1	863.6	812.7	689.7	595.8	544.8	-13.6	-8.6
	Percent							
Ratios:								
Debt/equity	21.3	23.5	24.5	27.5	28.4	26.8	3.3	-5.6
Debt/asset	17.6	19.0	19.6	21.6	22.2	21.2	2.3	-4.1

1/ Excludes CCC crop loans. 2/ GNP Implicit Price Index, base year 1982.

Figure 16--Nominal value of farm sector equity and debt, 1970-86

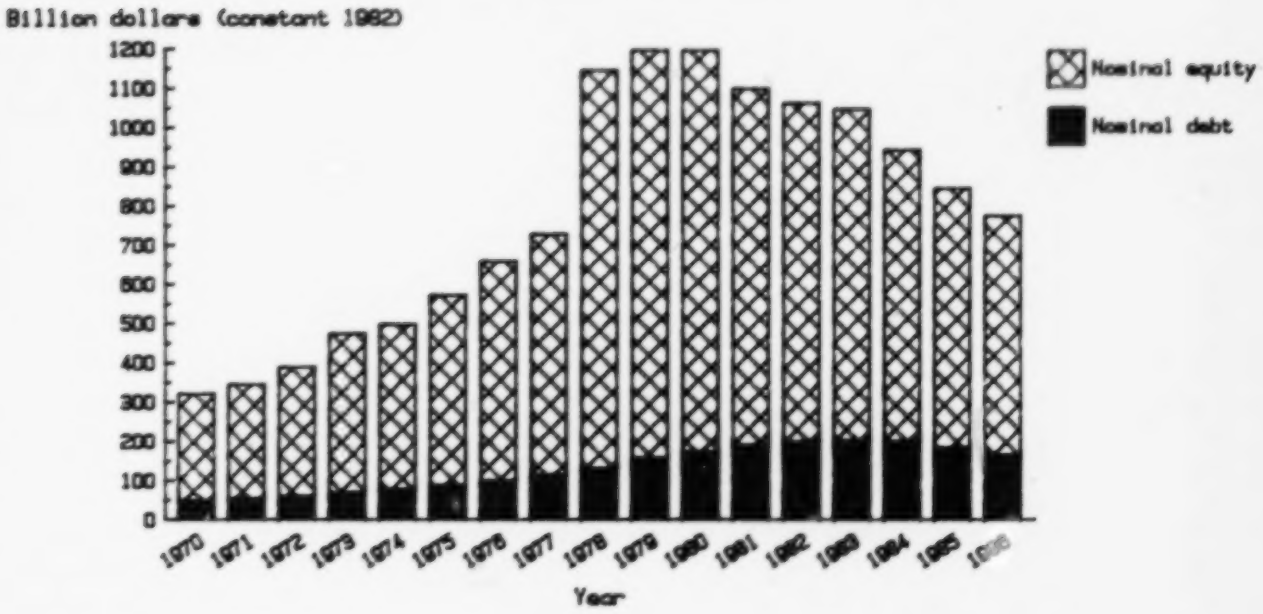
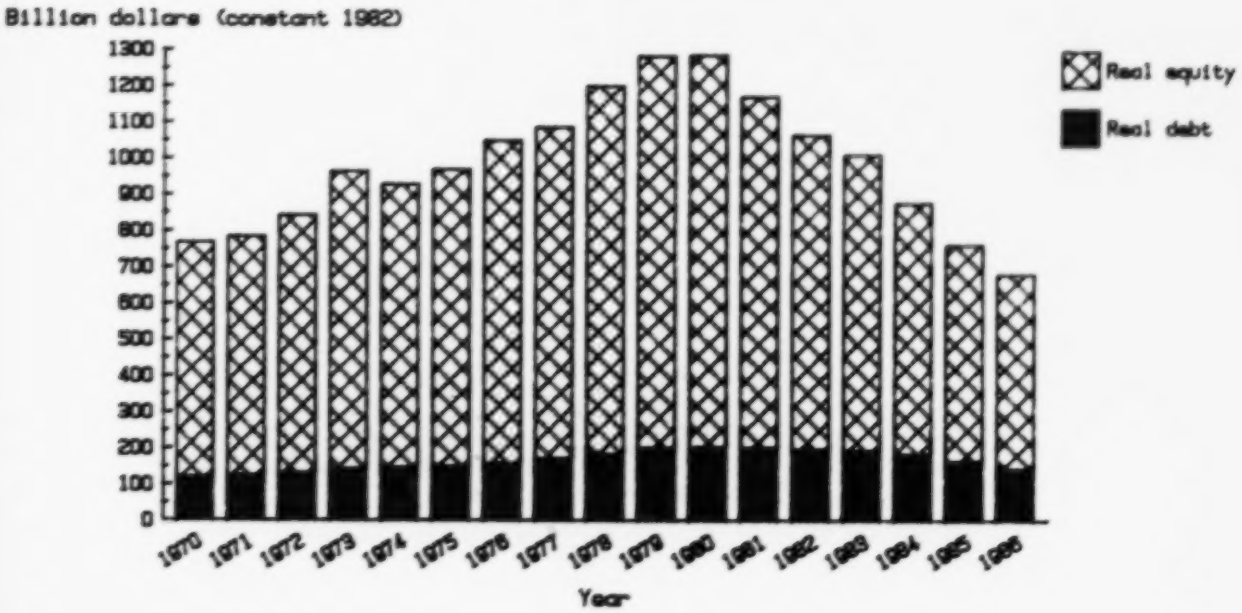


Figure 17--Real value of farm sector equity and debt, 1970-86



The value of crop inventories (excluding CCC stocks) fell over 50 percent, while the value of CCC stocks increased 12 percent. These changes in stockholding patterns reflected both high program participation rates and low (relative to the loan rate) commodity prices. The value of machinery and motor vehicles on farms fell to $93.8 billion, the fourth consecutive annual decline. The value of miscellaneous farm machinery, such as combines, balers, and swathers, continued to decline as investment in newer, more expensive equipment lagged.

The value of livestock and poultry on farms increased 3 percent to $47.6 billion, reflecting rising livestock prices in the face of declining inventory numbers. The cattle inventory slipped over 3 percent to 102 million head, the lowest level since 1961, while the hog inventory fell to 51 million head, a 3-percent annual drop that has reduced hog numbers to their lowest level since 1975. The value of inventories increased despite the decline in numbers when average values of cattle and calves rose 4 percent to $407 per head, and the average value of hogs and pigs increased 18 percent to $82.30 per head. Cattle and calves accounted for about 87 percent of total livestock inventory values, and hogs and pigs made up about 9 percent.

Total farm sector liabilities decreased 15 percent in 1986, the fourth consecutive year of decline. Outstanding real estate debt fell almost 12 percent because of debt repayment and loan losses. Nonreal estate debt dropped almost 19 percent in 1986 due to delayed capital replacement, reduced planted acreage, and lower production expenditures. Some of the decline in nonreal estate debt resulted from lenders requiring real estate as collateral for short-term loans. Every main source of nonreal estate farm loans decreased loan volume.

The volume of outstanding farm sector debt has declined 19 percent since peaking in 1983. Real estate debt has declined 15.7 percent since 1983, while nonreal estate debt has fallen 23.4 percent. The drop in outstanding debt came from lender reluctance to extend new debt, farmers' desires to pay off debt, and the charge-off of losses as lenders wrote off uncollectable loans.

Reductions of farm debt during 1985-86 (average annual declines of $18 billion) follow market adjustment in the sector during 1978-82 (average annual growth of $19 billion). So, even with debt reduction of this magnitude, it is difficult to alleviate the accumulated debt burden.

The debt-to-asset ratio (total farm liabilities divided by assets) measures the relative indebtedness of the farm business, an indicator of longrun farm financial strength. A low ratio implies a stronger financial position because a smaller proportion of assets are owed to creditors. After ranging at 0.15-0.16 during the 1970's, the debt/asset ratio increased to over 0.22 during 1980-86 (see table 16). The ratio improved slightly as the relative decline in 1986 debt approximated the relative drop in asset value.

Interest on Debt

Interest expenses on debt are a closely watched financial indicator. The inability to meet interest obligations may indicate potential debt repayment problems in the sector. Producers paid nearly $17 billion of interest in 1986, accounting for about 14 percent of total production expenses. However, interest expenses showed the fourth consecutive annual decline in 1986, having fallen over 22 percent since 1982 (table 17). Farmers paid $1.8 billion (9.5 percent) less

Table 17--Farm interest expenses and selected interest rates, 1981-86 1/

Item	1981	1982	1983	1984	1985	1986
			Percent			
Average on new farm loans:						
Real estate loans--						
Federal land banks	11.3	12.3	11.6	11.8	12.3	12.2
Life insurance companies	15.4	15.5	12.5	13.5	11.4	10.3
Farmers Home Administration	13.0	12.9	10.8	10.8	10.8	9.1
Nonreal estate loans--						
Rural banks	17.9	17.1	14.3	14.4	11.1	11.6
Production Credit Associations	14.5	14.6	12.0	13.4	12.4	11.8
Farmers Home Administration	14.0	13.7	10.3	10.3	10.3	8.7
Average on outstanding farm debt: 2/:						
Real estate 3/	8.6	9.5	9.6	9.6	9.2	9.4
Nonreal estate	12.2	12.4	11.4	11.3	10.7	10.9
Total	10.2	10.8	10.4	10.4	9.9	10.0
Prime rate, large banks	18.9	14.9	10.8	12.0	9.9	8.5
			Billion dollars			
Interest expenses:						
Real estate	9.1	10.5	10.8	10.7	9.9	9.1
Nonreal estate	10.7	11.3	10.6	10.4	8.8	7.8
Total	19.9	21.8	21.4	21.1	18.7	16.9

1/ Includes farm household debt and CCC debt for storage and drying facilities. 2/ Average on outstanding farm debt was estimated as interest expense divided by debt outstanding. 3/ Each component was weighted by the loan volume held by each lender. CCC crop loans are excluded from nonreal estate debt. Loans for storage and drying facilities from CCC are included with real estate debt.

in interest expenses in 1986 than in 1985, reflecting lower interest rates on outstanding debt and a reduction of outstanding debt due in part to debt paydowns. The prime rate more than doubled between 1979 and 1981 but declined over three points during 1984-86.

Interest paid on farm debt secured by real estate fell less than interest paid on nonreal estate debt during 1984-86. Although nominal interest rates have generally declined since 1984, the refinancing of existing real estate debt was probably at higher interest rates than the historical average. The refinancing put upward pressure on average interest expenses on real estate-secured debt. Costs of refinancing long-term debt slowed the effects of lower interest rates. For example, the average interest rate on nonreal estate-secured debt dropped from 12.2 percent in 1981 to 10.9 percent in 1986. However, the average interest rate on real estate-secured debt increased from 8.6 to 9.4 percent.

Debt Distribution among Lenders

Tables 18 and 19 show the distribution of real estate and nonreal estate debt by lender. The real estate/nonreal estate distinction typically refers to the loan collateral rather than the purpose of the loan. Commercial banks, the Farmers Home Administration (FmHA), and individuals and others do not require real estate as security for all loans, so these lenders are listed as holders of both real estate and nonreal estate debt. Federal land banks (FLB's) and life insurance companies are primarily real estate lenders, while Production Credit Associations (PCA's) and Federal Intermediate Credit Banks (through loans to other financial institutions) are nonreal estate lenders.

Commercial banks, life insurance companies, and the FmHA increased their shares of farm debt by the end of 1986. Commercial banks and FmHA gained market shares and real estate loan volume. Debt held by the Farm Credit System, which includes the FLB's and PCA's, fell by $10.6 billion. FLB debt declined $7 billion, and PCA debt fell $3.4 billion. The FLB share of all real estate-secured loans had fallen from 44 percent in 1984 to 39 percent by the end of 1986.

Total commercial bank debt declined $3 billion, mainly because nonreal estate debt fell $4.3 billion. However, real estate debt held by commercial banks increased $1.3 billion. These banks may have been reducing their operating loan portfolio and requiring real estate as security for new and existing loans. Debt owed to individuals and others fell by $6.2 billion (minus 14.6 percent) in 1986. Since 1940, credit secured from individuals and others has dropped from 42 percent to 16 percent of nonreal estate debt. Life insurance companies maintained market share despite an $844-million drop in real estate loans outstanding.

Operator Financial Stress

The distribution of operator debt, income, and financial stress varied by farm size, farm type, and region in 1986. We used data from the *Farm Costs and Returns Survey* (FCRS), 1984-86, to analyze the incidence and distribution of financial stress among operators of commercial-sized farms. We define commercial-sized farms as operations with annual gross sales of more than $40,000.

Income and indebtedness are important indicators of a farm's financial position, and in combination are useful in pinpointing financial stress. We calculated three measures of income for commercial-sized farms from FCRS data: net cash farm income, net cash household income, and net farm income. These three measures differ conceptually (see "Measures of Farm Financial Performance"), offering alternative ways of assessing yearly revenues and expenses of the farm household or business. The debt/asset ratio, a measure of solvency, is an indicator of the financial risk associated with the farm business.

Relying on income or solvency alone can be misleading. For example, a high debt/asset ratio is acceptable if the firm generates enough income to service debt and meet other financial obligations. Even low debt can be a problem if cash flow is insufficient to pay principal and interest. We use a framework for evaluating individual farm financial health which is based on combined income and solvency position (fig. 18).

Farms or households classified in a favorable position have positive income and a low debt/asset ratio (less than 0.40). In good, short-term, financial health, these financially healthy operations might consider investment or business

Figure 18--Financial health classifications

Income status	Debt/asset ratio	
	0.40 and under	Over 0.40
Positive:		
Net cash farm income	Favorable	Marginal solvency
Net cash household income		
Net farm income		
Negative:		
Net cash farm income	Marginal income	Vulnerable
Net cash household income		
Net farm income		

Table 18--Distribution of farm debt (including operator households), by selected lenders, December 31, 1985-86

Lender	Type of debt					
	Real estate		Nonreal estate		Total 1/	
	1985	1986	1985	1986	1985	1986
	Billion dollars					
Commercial banks	11.4	12.7	35.5	31.2	46.9	43.9
Federal land banks	44.7	37.7	n/a	n/a	44.7	37.7
Federal Intermediate Credit Banks	n/a	n/a	.5	.3	.5	.3
Production Credit Associations	n/a	n/a	14.6	11.0	14.6	11.0
Life insurance companies	11.8	10.9	n/a	n/a	11.8	10.9
Farmers Home Administration	10.4	10.3	16.7	16.4	27.1	26.7
Commodity Credit Corporation 2/	.3	.1	n/a	n/a	.3	.1
Individuals and others	27.2	24.0	15.4	12.4	42.6	36.4
Total	105.8	95.8	82.2	71.0	188.0	166.8

n/a=not applicable.
1/ Totals may not add due to rounding. 2/ Excludes loans on crops and includes loans for crop storage and drying facilities.

Table 19--Farm real estate and nonreal estate debt (including operator households), selected years, December 31, 1975-86

Lender	1975	1980	1981	1982	1983	1984	1985	1986
	Billion dollars							
Federal land banks	16.0	36.2	43.8	47.8	48.9	49.2	44.7	37.7
Life insurance companies	6.7	12.9	13.1	12.8	12.7	12.4	11.8	10.9
All operating banks	26.5	40.1	41.2	44.5	48.3	49.8	46.9	43.9
Production Credit Associations	10.8	19.7	21.2	21.0	19.3	17.9	14.1	10.7
Federal Intermediate Credit Banks	.4	.8	.9	.9	.9	.9	.5	.3
Farmers Home Administration	5.1	19.5	23.2	23.9	24.2	25.7	27.1	26.7
Total 1/	65.4	129.3	143.4	150.4	154.3	155.9	145.1	130.3
Individuals and others	25.8	47.9	50.6	51.5	51.3	47.9	42.6	36.4
Total 1/	91.2	177.2	193.9	202.0	205.6	203.8	187.7	166.8
Commodity Credit Corporation 2/	.4	5.0	8.0	15.7	10.8	8.9	17.3	18.8
Total 1/	91.7	182.1	202.0	218.5	217.3	213.1	205.0	185.1

1/ Totals may not add due to rounding. 2/ Includes both loans on crops and loans for crop storage and drying facilities.

expansion. Farms in the marginal income category have low debt but negative income; their income problem is likely related to current business decisions or changes in the economic climate rather than to the financial riskiness of past decisions.

The marginal solvency category includes farms or households with high debt (debt/asset ratio above 0.40) and positive income who, while not experiencing short-term income difficulties, are susceptible to economic changes that would prevent making cash commitments. Vulnerable farms or households are in a doubly stressful situation when they have both high debt and negative income. Their income neither meets current expenses nor reduces existing indebtedness, and their continued viability is threatened.

MEASURES OF FARM FINANCIAL PERFORMANCE

Income Measures

Net cash farm income. Measures the amount of funds generated by the farm business that can be used repay principal, expand the business, or pay for family consumption or other obligations. Calculated as gross cash income minus cash operating expenses, including interest payments but excluding principal repayment.

Net cash household income. Measures funds available to the farm household, after cash business and family living expenses are met, for business expansion, further consumption, savings, or other obligations. Calculated as family nonfarm income plus net cash farm income minus an estimate of principal repayments and a family living allowance. Family living allowance for 1986 was estimated at $15,500. Principal payments estimated for each operation were based on the amount of real estate and nonreal estate debt owed to each lender and were consistent with standard debt repayment schedules.

Net farm income. Provides a calendar year measure of the net value of agricultural production whether sold or stored on the farm. Net farm income calculated as adjusted gross cash income, reflecting changes in inventory values, plus nonmoney income minus total operating expenses, including both interest and depreciation of capital stock.

Solvency Measures

Debt/asset ratio. Measures both proportional owner equity in the farm and the financial risk exposure of the operation (the extent to which the farm's assets have been borrowed against). Calculated as total debt outstanding as of January 1, 1987, divided by the farmer's estimate of the current market value of owned assets of the farm business.

Estimates of income, debt, and asset values developed from the FCRS differed from our farm sector estimates. FCRS data are collected only for farms that sold or purchased at least $1,000 of agricultural products during the year, and FCRS data represent only farm operators (not landlords and contractors). The FCRS accounted for about 95 percent of the official USDA number of farms with sales above $40,000.

Debt Levels and Distribution

Approximately two of three commercial-sized farms ended 1985 and 1986 in a good solvency position, with debt/asset ratios of 0.40 and below (table 20). While the survey estimate of the number of commercial farms dropped by 12 percent from the end of 1985 to the end of 1986, the number of insolvent farms (with debt/asset ratios above 1) dropped by over 20 percent, probably because of lender foreclosures on insolvent farms and a shift of some farms from insolvent to solvent status. Although a smaller percentage of farmers were insolvent in 1986, a larger share had debt/asset ratios between 0.71 and 1. If lenders considered only farms with debt/asset ratios less than 0.70 as creditworthy, then more than 15 percent of all commercial farms would not have qualified for additional credit based on their 1986 balance sheets compared with 14 percent in 1985.

Farms with annual sales of $100,000-$249,999 improved their solvency positions the most during the year, and the percentage of farms in that sales class which were insolvent fell from 8 to 5 percent (fig. 19). Farms with sales of $250,000-$499,999 also improved their debt/asset positions, while the debt/asset distribution of larger commercial farms remained about the same. The share of smaller farms, sales of $40,000-$100,000, with low debt/asset ratios declined and the insolvent share increased (although small farms continued to have lower debt/asset ratios than larger farms). Land value declines in 1986, which were proportionately larger for poorer quality land than for more productive land, may have played a role in the relatively poor solvency performance of smaller commercial-sized farms during the year.

Total debt owed by commercial operators fell 17 percent from $95.5 billion on January 1, 1986, to $79.7 billion a year later. The percentage of all debt owed by insolvent farms decreased, and the percentage owed by farms with debt/asset ratios between 0.70 and 1 increased from 18 to 21 percent of all debt.

Net Income Levels

The proportion of commercial farms which earned negative net cash incomes fell in 1985 and 1986 (table 21), indicating improved liquidity for the farm business and the farm household. The trend of improved cash flow is consistent with aggregate sector income estimates, largely due to increased Government payments and reduced production (including interest) expenses. Net cash income was not as strong for households as for businesses in any of the past 3

years, suggesting that many farm families either consumed less or saved less to support the farm business.

The share of commercial farm businesses with negative net farm incomes (which can only be calculated for 1986) was higher than the share with negative net cash incomes. So, some farmers are drawing down inventories and not replacing depreciated capital to maintain current cash flow, possibly at the expense of future profitability.

Financial Stress

The share of all farms classified as vulnerable was lower in 1986 than in 1985, and the share classified as favorable was greater in 1986 (see table 21). Fifty-five percent of farm businesses and 49 percent of farm households were in a favorable financial position in 1986 (302,000 and 270,000 respectively) when we used net cash income with the debt/asset ratio to classify farms. One-half of farm businesses were healthy when we used net farm income, which is a longer term indicator of financial health, to classify farms.

Trends within the remaining categories are revealing. The percentage of farms in the marginal income category declined under both cash income measures during 1984-86, indicating a continuing improvement in cash flow. The share of farms in the marginal solvency category increased in both 1985 and in 1986, partly because increased income in 1986 moved previously vulnerable farms into the marginal solvency classification. Some farms probably moved from the marginal income category into the marginal solvency classification because of the combined influences of improved cash flow and the continued erosion of asset values.

Nearly half of all commercial-sized farm businesses (around 261,000 farms) had sales of less than $250,000 in 1986, and they were in a favorable financial position. We used net cash farm income and solvency to analyze the distribution of financial stress by farm size, farm type, and region. Because net cash farm income is used, the results indicate financial conditions of the farm business from a short-term perspective. Using net cash household income or net farm income produces different results.

Although a larger proportion of the small commercial-sized farms (sales under $250,000) were in the favorable classification compared with larger farms, we determined that smaller farms also had a larger proportion showing vulnerablity than did large farms (table 22). The share of commercial farms classified as vulnerable decreased from 1985 to 1986 for all sales categories except the smallest. Farms with sales of $100,000-$249,999 showed the most improvement in 1986, with the share of favorably classified operators rising from 52 percent to 56 percent.

Because debt/asset ratios of small commercial farms (sales below $100,000) increased in 1986, a greater proportion of these farms were in the marginal solvency category (an increase of around 6,000 farms). A shift from marginal income to marginal solvency status took place due to increased incomes and reduced asset levels. In other sales classes, the proportion of operators in the marginal solvency

Figure 19--Commercial farms with debt/asset ratios above 1, by sales class

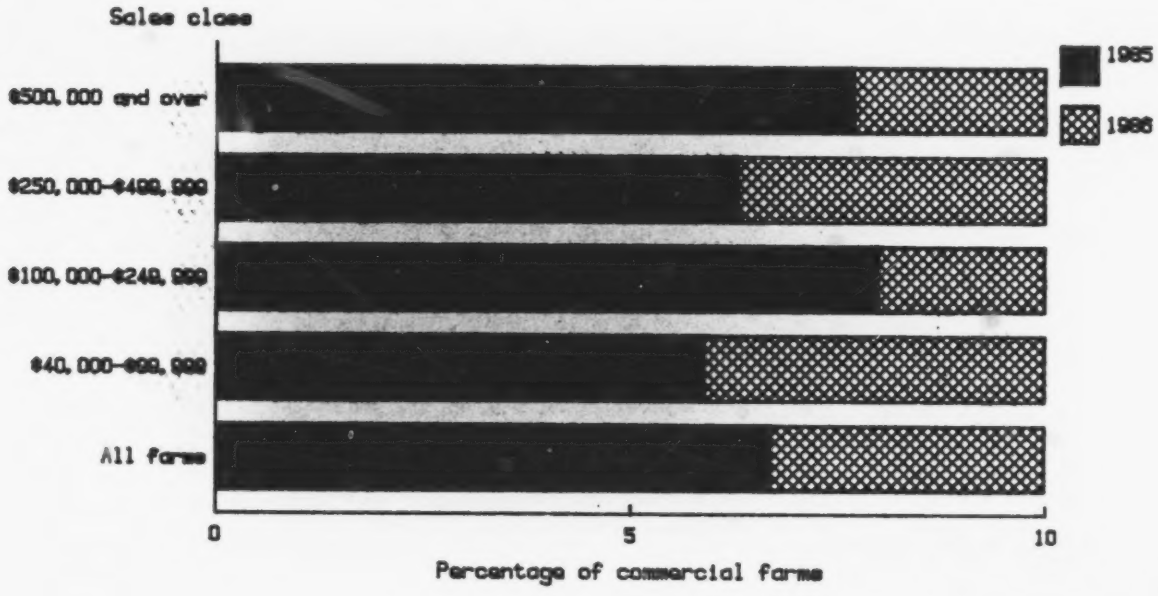


Table 20--Distribution of commercial-sized farms by size and debt/asset ratio, 1985-86 1/

Farm size	Debt/asset ratio									
	0.40 or less		0.41-0.70		0.71-1.0		1.0 or more		Total 2/	
	1985	1986	1985	1986	1985	1986	1985	1986	1985	1986
	Percent									
$500,000 and over	3.1	3.0	1.1	1.2	0.5	0.5	0.4	0.3	5.2	5.1
$250,000-$499,999	7.3	5.9	3.2	2.2	1.3	1.0	.8	.5	12.6	9.6
$100,000-$249,999	22.7	24.9	7.4	7.9	3.3	3.8	2.9	2.0	36.3	38.7
$40,000-$99,999	33.1	31.4	7.5	8.3	2.6	3.8	2.7	3.1	45.9	46.6
Total 2/	66.3	65.2	19.2	19.7	7.7	9.2	6.7	5.9	100.0	100.0
	Thousands									
Number of farms	412.9	357.0	119.8	107.8	47.9	50.1	41.9	32.4	622.4	547.3
	Billion dollars									
Amount of debt	29.8	25.0	32.2	26.9	17.6	16.7	15.9	11.2	95.5	79.7

1/ Commercial-sized farms had annual sales of at least $40,000. 2/ Totals may not add due to rounding.

Table 21--Financial position of commercial-sized farms, 1984-86 1/

Income and year	Debt/asset ratio		
	0.40 and below	above 0.40	Total 2/
	Percentage of commercial farms		
Positive income:			
Net cash farm income--			
1984	54.4	20.1	74.5
1985	53.8	23.7	77.5
1986	55.1	25.6	80.7
Net cash household income--			
1984	46.1	12.4	58.5
1985	47.8	16.7	64.6
1986	49.4	18.3	67.8
Net farm income-- 3/			
1986	50.0	21.8	71.8
Negative income:			
Net cash farm income--			
1984	14.3	11.1	25.5
1985	12.5	9.9	22.5
1986	10.2	9.1	19.3
Net cash household income--			
1984	22.7	18.8	41.5
1985	18.5	16.9	35.4
1986	15.8	16.4	32.2
Net farm income-- 3/			
1986	15.3	12.9	28.2

1/ Commercial farms had annual sales of at least $40,000. 2/ Totals may not add due to rounding. 3/ Data for 1984-85 are unavailable.

Table 22--Distribution of commercial-sized farms by financial health category and farm size, 1985-86 1/, 2/

Farm size	Favorable		Marginal income		Marginal solvency		Vulnerable		Total 3/	
	1985	1986	1985	1986	1985	1986	1985	1986	1985	1986
	Percent									
$500,000 and over	2.6	2.5	0.6	0.5	1.6	1.7	0.5	0.4	5.2	5.1
$250,000-$499,999	6.4	5.0	1.0	.8	4.0	3.0	1.3	.7	12.6	9.6
$100,000-$249,999	19.0	21.5	3.8	3.5	10.1	10.6	3.5	3.2	36.3	38.7
$40,000-$99,999	25.9	26.1	7.3	5.4	8.0	10.3	4.7	4.9	45.9	46.6
Total 3/	53.9	55.1	12.7	10.2	23.7	25.6	10.0	9.1	100.0	100.0

1/ Financial health categories were determined using net cash farm income and the debt/asset ratio. 2/ Commercial-sized farms had annual sales of at least $40,000. 3/ Totals may not add due to rounding.

category fell or stabilized and the proportion declined in the marginal income category.

The number of cash grain enterprises declined in 1986, while livestock operations increased as producers took advantage of better conditions in the input and output markets for livestock producers (table 23). Cash grain enterprises constituted more than 30 percent of all commercial-sized farms in 1986, and 52 percent of these farms were classified in the favorable category compared with 53 percent in 1985. Fifty-four percent of all beef, hog, or sheep operations reached a favorable financial position at the end of 1986, up from 47 percent in 1985. But, the share of vulnerable cash grain farms increased during 1986, while the share and the numbers of vulnerable beef, hog, or sheep farms declined (fig. 20).

At least 50 percent of operations in each farm type showed financial stability. Nursery/greenhouse operations, which made up 2 percent of all commercial farms, had the highest share (74 percent) classified favorable and the lowest share (5 percent) classified vulnerable. Dairy farms, which were nearly 25 percent of all commercial-sized farms in 1986, ranked second, with 61 percent (82,000) classified favorable and 6 percent (8,000) classified vulnerable. These statistics represent an improvement for dairy farms over 1985.

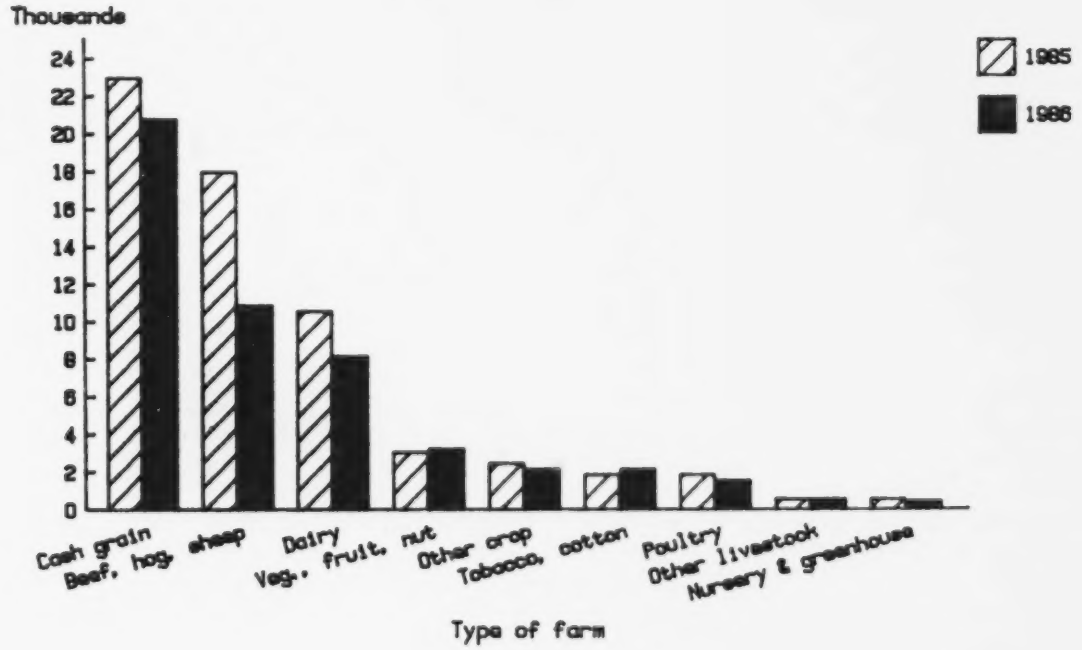
The share of farms in the vulnerable category increased for cash grain, tobacco or cotton, poultry, other crop, and other livestock (which include diversified operations as well as farms specializing in crops or livestock other than those in the major categories). We associated the highest incidence of stress with farms classified as other crop enterprises, with 14 percent considered vulnerable. Solvency was a greater problem than liquidity for all farm types except vegetable, fruit, or nut and other livestock farms among farms in the marginal category.

Despite the deterioration in the financial condition of cash grain farms, farmers in the Lake States, Corn Belt, Northern Plains, and Southern Plains improved their positions, with an increase in the percentage and number of farmers that showed financial improvement (174,000 farms in 1985 and 222,000 in 1986) (table 24). Lake States' improvement probably came from dairy farmer financial gains, while in the other regions, improved market conditions for beef and hog farms likely boosted financial health.

Financial conditions in the Northeast, Pacific, and Mountain States changed little from 1985 to 1986. Economic health improved in the Corn Belt, Lake States, Northern Plains, and Southern Plains as the share of farms favorably classified increased and the share of vulnerable farms decreased or increased only slightly. Financial conditions deteriorated for farm businesses in the Appalachian, Delta, and Southeast regions during 1986. The latter two regions had the worst financial positions of all the regions.

Some regions stood out in 1986 as having primarily solvency-related problems, while income deficits predominated in other regions. The Lake States, Corn Belt, and Northern Plains accounted for 59 percent of all farms, yet they had 70

Figure 20--Vulnerable farms, by type of enterprise



percent of all operators in a marginal solvency category but only 37 percent of those in a marginal income position. Similar analyses revealed that income was the major problem in all the remaining regions except the Northeast during 1986, which had the strongest financial position. The Northeast had 8 percent of all farms, 10 percent of those in a favorable financial position, but only 3 percent of vulnerable operations.

Potential Losses on Agricultural Loans

Financial difficulties in the 1980's have produced a high rate of farm failure, threatening the survival of financial institutions that lend to farmers. Falling commodity prices and plummeting land values were key causes of financial stress. Expenses exceeded receipts for many farmer-operators who were unable to meet scheduled interest and principal payments.

Farm real estate values reflected expected earnings and inflation rates. Average land value had dropped 45 percent from the 1980 inflation-adjusted level by early 1987. The financial situation of many farmers and their bankers became untenable because loan payments were not being made, and the loan security provided by farmland collateral disappeared.

Estimates of Loan Losses

We based the potential loan loss estimates in this report on the FCRS data collected in February-March of each year by NASS State offices. The farm operator survey represents at least 90 percent of the agricultural sector's commercial-sized

Table 23--Distribution of commercial-sized farms, by financial health category and major enterprise, 1985-86 1/, 2/

Major enterprise 3/	Favorable		Marginal income		Marginal solvency		Vulnerable		Total 4/	
	1985	1986	1985	1986	1985	1986	1985	1986	1985	1986
	Percent									
Cash grain	19.4	17.1	3.7	2.8	10.0	9.4	3.7	3.8	36.7	33.1
Tobacco, cotton	2.2	1.9	.9	.5	.8	.9	.3	.4	4.2	3.7
Vegetable, fruit, nut	2.1	2.5	.7	.8	.5	.7	.5	.6	3.8	4.6
Nursery, greenhouse	1.7	1.4	.1	.1	.2	.3	.1	.1	2.1	1.9
Other crop	2.1	1.4	.7	.4	1.1	.6	.4	.4	4.3	2.8
Beef, hog, sheep	9.6	13.9	3.6	3.7	4.3	6.0	2.9	2.0	20.4	25.6
Dairy	12.9	14.9	2.0	1.3	5.7	6.6	1.7	1.5	22.3	24.3
Poultry	2.4	1.4	.5	.1	.7	1.0	.3	.3	3.9	2.8
Other livestock	1.3	.6	.4	.4	.4	.2	.1	.1	2.3	1.2
Total 4/	53.7	55.1	12.6	10.1	23.7	25.7	10.0	9.2	100.0	100.0

1/ Financial health categories were determined using net cash farm income and the debt/asset ratio. 2/ Commercial-sized farms had annual sales of at least $40,000. 3/ Farms were assigned to a particular enterprise type if the farmer reported that the commodity represented the largest proportion of gross income. 4/ Totals may not add due to rounding.

Table 24--Distribution of commercial-sized farms, by financial health category and region, 1985-86 1/, 2/

Region	Favorable		Marginal income		Marginal solvency		Vulnerable		Total 4/	
	1985	1986	1985	1986	1985	1986	1985	1986	1985	1986
	Percent									
Northeast	6.6	5.5	0.9	0.8	1.5	1.4	0.4	0.3	9.4	8.1
Lake States	7.2	8.0	1.2	.7	5.5	5.5	1.5	1.2	15.3	15.5
Corn Belt	14.0	15.5	2.1	2.2	7.1	7.6	2.6	2.7	25.9	27.9
Northern Plains	7.5	8.8	1.3	.9	3.9	4.9	1.6	1.3	14.3	16.0
Appalachia	4.1	3.5	1.5	.9	.7	.9	.3	.4	6.6	5.7
Southeast	2.4	1.5	.7	.7	.8	.7	.7	.4	4.7	3.3
Delta States	1.7	1.9	.6	.6	.6	1.1	.5	.6	3.5	4.3
Southern Plains	3.1	3.3	2.1	1.1	1.2	1.1	1.1	1.0	7.4	6.4
Mountain States	3.3	3.4	1.1	1.1	1.4	1.4	.7	.6	6.5	6.5
Pacific States	3.8	3.8	1.0	1.1	1.1	1.0	.5	.6	6.4	6.4
Total 4/	53.7	55.1	12.5	10.2	23.8	25.6	9.9	9.1	100.0	100.0

1/ Financial health categories were determined using net cash farm income and the debt/asset ratio. 2/ Commercial-sized farms had annual sales of at least $40,000.

farms and about 60 percent of smaller farm operations. This section focuses on commercial-sized farms with annual business activity of $40,000 or more.

Potential lender loss was an estimate of farm debt that would not be repaid from liquidation of the assets of vulnerable operations. Lenders cannot recover a substantial amount of the collateral on farm loans because estimated values of assets are not realized in forced sales. Lending institutions typically expect to lose about 33 percent of the value of foreclosed assets. We assumed that 20 percent of machinery and real estate assets and 10 percent of crop and livestock inventories were not recovered by lenders. Our more optimistic recovery rate reflects our view that some of the financially vulnerable operations will work their way back to financial health and that their assets will not be liquidated.

Financially Vulnerable Operations

The analytical framework we used to determine if farmers and their lenders were likely to experience debt loss permitted a tradeoff between stronger cash flows and weakening debt position (where debts increasingly dominate the farm asset base).

We considered farmers to be vulnerable to potential loan losses under these conditions:

- technical insolvency (debts larger than assets),
- very high debt ratio, unable to meet all obligations, or
- high debt ratios, unable to meet any obligations.

These categories describe debt burden (debt/asset ratio):

- no debt (0)
- low debt (0-0.40)
- high debt (0.40-0.70)
- very high debt (0.70-1)
- technically insolvent (more than 1).

We measured debt service ability by the ratio of net cash flow (after capital replacement and family living expenses but before interest expense) to the sum of interest plus estimated principal payments due on farm loans to produce the following:

- ratio of 1 or more meant full debt service,
- less than 1 and more than 0 meant partial debt service, and
- 0 or less implied no service.

The financially vulnerable group of about 100,000 farms made up about 16 percent of all commercial operations but accounted for about 33 percent of commercial farm debt (table 25). The shaded area in table 25 represents two distinct types of financial problems: 67,000 farmers with high debt to very high debt, who experienced cashflow difficulties but remained solvent, and 37,000 insolvent farmers with varied debt service ability who would not have sufficient assets after liquidation to repay their debt. The second group was fundamental to the financial problem confronting farm lenders because these farmers held 90 percent ($5.6 billion) of potential loan losses (table 26).

Small commercial farms (sales between $40,000 and $100,000) were nearly half the total number of operations with potential loan losses (49,000) but generated less than 31 percent of the total estimated value of losses. Nearly 70 percent of the $6.3-billion potential loan loss was on debt held by operations with $40,000-$250,000 in production value. Operations that produced more than $1 million in commodities were 2 percent of stressed farms but contributed 16 percent of potential loan losses.

About 15 percent of commercial operations with production of $100,000-$500,000 showed financial vulnerablity. The proportion of farms with potential loan losses was slightly higher, about 18 percent, for larger and smaller commercial operations, suggesting two contrasting patterns in the development of severe lender difficulties: a large number of unrecoverable loans to small commercial operators, or a small number of unrecoverable loans to a few of the largest farm operations.

The proportion of farms with potential loan losses has declined markedly in the Northern Plains and eastern Corn Belt since 1985 (table 27). Ten percent of commercial operators threatened loan losses in the Pacific States and 8 percent in New Jersey, New York, and Pennsylvania. The continuing strength in dairy, fruit, and vegetable earnings and relatively stronger land prices have provided financial strength to both coastal regions.

Stress conditions appeared to be stabilizing in Iowa, Minnesota, Wisconsin, and Missouri. About 35 percent of all financially vulnerable commercial operators resided in these four States during 1986, and more than 20 percent of the operators remained in financial difficulty. Iowa and Minnesota, which have had the largest number of operators with potential loan losses, experienced 60 percent of land price declines over the past 5 years.

Loan loss conditions deteriorated in the Southern Plains, Delta, and Southeast. Louisiana experienced a 27-percent land price decline in 1986. Texas, Arkansas, and Mississippi have also experienced 1 or more years of drought, suffering losses on corn, soybeans, and grain sorghum. Total loan losses could be less in these regions because the South has fewer commercial-sized operations than does the Midwest.

However, average loan loss per stressed farmer could be greater in the South than in other regions.

Potential Lender Losses

Estimated loan charge-offs increased from $2 billion in 1984 to nearly $5 billion in 1986. Cumulative lender losses on all agricultural loans likely reached $11 billion for the 3 years (table 28). Potential lender losses on loans to commercial operators reached an estimated $6.3 billion at the beginning of 1987. The three largest institutional lenders in agriculture, FmHA, FCS, and banks, provided about 60 percent of agricultural financing in 1986. These lenders will likely absorb 80-90 percent of the remaining potential loan losses among commercial farmers. Nearly $2 billion of the potential losses came from about 120,000 FmHA borrowers.

FmHA has been a lender of last resort with responsibilities to financially hard-pressed farmers. FmHA's difficulties may increase relative to the FCS and banks after 1987, because $400 million in loan losses were registered by the FmHA in 1986 compared with $1.4 billion acknowledged by the FCS. No principal or interest payments could have been made from farm or family earnings on 43 percent of the FmHA debt held by stressed operators (table 29). Loans to vulnerable operators from the FCS and banks were more likely to have had at least some interest paid. No principal or interest payments could have been made on 24 percent of FCS's and 33 percent of commercial banks' loans to stressed operators. Sixteen percent of all FmHA loans to commercial farm operations may have been charged off compared with 7 percent for all lenders.

The 26-percent increase in potential loan losses between the beginning of 1985 and 1986 reflects two key financial factors: commodity receipts less cash expenses averaged only $23,600, and average land values declined $84 per acre in 1985. Thus, debt service capacity was limited by low incomes and balance sheets weakened by declines in asset values.

Table 25--Potential loan losses estimated for commercial-sized farms from the 1986 Farm Costs and Returns Survey 1/

Debt service class 2/	Debt/asset ratio: No debt (0)	Low debt (0-0.40)	High debt (0.40-0.70)	Very high debt (0.70-1)	Insolvent (more than 1)	Farm numbers and debt
Full debt service	Financial strength: 526,700 farms (84 percent of total) $56.7 billion debt (67 percent of total)					334,400 farms $38 billion
Partial debt service				Financial stress: 104,100 farms (16 percent) $28.4 billion debt		112,200 farms $29 billion
No debt service				$6.3 billion potential lender losses (33 percent)		184,200 farms $18 billion
Farm numbers and debt	120,900 farms 0	284,700 farms $26 billion	122,900 farms $29 billion	55,000 farms $17 billion	37,000 farms $12 billion	630,800 farms $85 billion

1/ Farms surveyed in early 1987 with sales or value of production greater than $40,000. 2/ Proportion of principal and interest which could be paid on schedule.

Table 26--Debt at risk and potential lender loss

Debt service category	Debt-to-asset ratio: High debt (0.40-0.70)	Very high debt (0.70-1)	Insolvent (exceeds 1)	Total
		Number of farms		
All farms:				
Full debt service	n/a	n/a	12,860	12,860
Partial debt service	n/a	17,330	12,900	30,230
No debt service	33,590	15,880	11,510	60,980
		Million dollars		
Debt held by stressed farms:				
Full debt service	n/a	n/a	3,360	3,360
Partial debt service	n/a	6,180	5,640	11,820
No debt service	6,280	3,730	3,150	13,180
Potential loan loss:				
Full debt service	n/a	n/a	1,400	1,400
Partial debt service	n/a	250	2,440	2,690
No debt service	310	130	1,780	2,220
Total	310	380	5,620	6,310

n/a=not applicable.

Table 27--Potential loan losses for selected State groups

Regions with selected States	Farms that could default on loans in-- 1985		1986	
	Number	Percent	Number	Percent
Western Corn Belt: Iowa, Minnesota, Wisconsin, Missouri	37,700	21	36,600	22
Northern Plains: Kansas, Nebraska, North Dakota, South Dakota	21,100	19	15,400	16
Eastern Corn Belt: Illinois, Indiana, Michigan, Ohio	17,400	16	12,500	13
Southern Plains/Delta: Arkansas, Louisiana, Oklahoma, Texas	12,600	16	14,400	22
Southeast: Alabama, Georgia, Mississippi, North Carolina	8,800	18	7,600	21
Pacific: California, Oregon, Washington	6,000	16	4,200	10
East: New Jersey, New York, Pennsylvania	4,600	11	2,900	8
Total	108,200	18	93,600	17
United States	122,500	17	104,100	16

Table 28--Losses on agricultural loans, 1984-86

Lender	1984	1985	1986
	Million dollars		
Commercial banks 1/	900	1,300	1,200
Farm credit system	428	1,105	1,400
Farmers Home Administration	55	146	400
Life insurance companies, individuals, and others 2/	600	1,400	2,000
Total loan losses	2,000	4,000	5,000

1/ Only nonreal estate loan losses were included. 2/ Because loan losses by these lenders are not reported, we estimated by assuming the same ratio of charge-offs to outstanding loans as lending institutions that reported loan losses.

Table 29-Estimated potential agricultural loan losses for lenders, 1985-87

Lender	Total potential loan losses 1985	1986	1987	Share of potential loan losses	Loss as share of lender's loans	Share of stress loans without service
	Million dollars			Percent		
Farmers Home Administration	1,260	2,840	1,850	31	16	43
Commercial banks	1,850	2,140	1,800	28	8	33
Farm credit system	2,250	2,100	1,660	26	7	24
Individuals	650	800	440	7	4	32
Other lenders	830	740	450	7	5	55
Total	6,850	8,610	6,310	100	7	35

Net average receipts after expenses increased to $28,700 in 1986, and average land values declined only $47 per acre. Lower estimates of potential loan losses in 1986 also reflected loan charge-offs and debt restructuring which took place before the 1986 survey. Estimates of potential loan losses among commercial-sized farms declined 27 percent from $8.6 billion in early 1986 to $6.3 billion in early 1987. We found evidence of the resolution of some severe debt problems in the survey data, nearly 9,000 fewer insolvent commercial operations.

Debt in the farm operator survey amounted to about 60 percent of the debt in the agricultural sector. When the potential losses estimated for the survey debt were applied proportionally to the total debt in agriculture, the likely range of loan losses increased from $6.3 to $7-$12.9 billion.

We assumed that operators with debt/asset ratios of 2 or higher will have had their loans foreclosed or restructured by the end of 1987. This reduces projected potential loan losses from $7 billion to approximately $4 billion between January 1987 and January 1988.

Nonoperator landlord debt and the personal debt of farm families, which are not included in the survey, will probably exhibit lower rates of loss than operator debt. If the rate of loan losses on nonsurvey debt is half that on operator debt, then lenders will absorb about $10 billion in loan losses through the 1980's. Total loan losses in the agricultural sector between 1984 and 1989 will then be $20-$22 billion, or approximately 10 percent of debt outstanding when financial problems began in the early 1980's.

The financial burden mirroring loan losses of $20 billion is immense. If, however, the pace of loan writeoffs continues in 1987 at the $5-billion rate estimated for 1986, then the farm sector will have digested 70-80 percent of the debt crisis by the end of 1987.

LINKAGES OF AGRICULTURE TO OTHER SECTORS

In 1986, the food and fiber system provided jobs for 20 million workers, nearly 18 percent of the total civilian workforce, and generated over $700 billion of GNP, 16.6 percent of the total in the economy (tables 30 and 31). The demand for farm products tends to be relatively stable. Related supporting activities, such as producing, assembling, processing, and distributing these products to consumers is also relatively stable. Therefore, under normal economic growth in the economy, demand for other products is likely to grow faster than food and fiber demands, and employment and income in the food and fiber sector should slowly decrease as a share of the total economy, a pattern that continued a trend in 1986.

Food Consumption

After rising for 3 consecutive years, total food consumption remained steady in 1986 as measured by USDA's per capita food consumption index, preliminary estimates indicate. This index, calculated from pounds of food and retail prices in a base year, was unchanged last year but was about 4 percent higher than in 1982 (table 32). While the index includes most foods, it does not measure total food use because data are not available for some fruit and vegetables and other products. Food consumption has been relatively stable over the long term, increasing by only about 4.5 per-

Table 30--Employment in the food and fiber system, selected years, 1976-86

Item	1976	1981	1982	1983	1984	1985	1986
				Million workers			
Employment:							
Farm sector	2.8	2.5	2.3	2.5	2.6	2.4	2.1
Nonfarm sectors	17.4	19.0	19.2	18.7	18.8	19.0	18.8
Food processing	1.6	1.5	1.6	1.5	1.4	1.5	1.4
Manufacturing	3.2	3.4	3.3	3.1	3.0	2.9	2.8
Transportation, trade, and retailing	5.8	6.5	6.6	6.5	6.6	6.7	6.8
Restaurants	3.1	3.5	3.5	3.6	3.6	3.7	3.8
All other	3.8	4.1	4.2	4.0	4.1	4.2	4.1
Total food and fiber 1/	20.2	21.5	21.6	21.1	21.3	21.4	21.0
Total domestic economy 1/	86.2	108.7	110.2	111.6	113.5	115.5	117.8
				Percent			
Employment:							
Farm sector	3.0	2.3	2.1	2.2	2.3	2.1	1.8
Nonfarm sectors	18.1	17.5	17.5	16.7	16.5	16.5	16.1
Total food and fiber 1/	21.0	19.8	19.6	19.0	18.8	18.5	17.9
Total domestic economy 1/	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Totals may not add due to rounding.

Table 31--Value added in the food and fiber system, selected years, 1976-86

Item	1976	1981	1982	1983	1984	1985	1986
				Billion dollars			
Value added:							
Farm sector	43.4	67.3	75.1	49.7	64.6	73.2	64.4
Nonfarm sectors	311.2	495.0	536.2	552.8	595.3	632.2	637.1
Food processing	43.3	61.7	70.0	70.4	75.6	84.5	82.2
Manufacturing	60.9	93.1	97.5	98.0	101.6	103.4	102.3
Transportation, trade, and retailing	106.7	175.6	188.1	196.8	208.0	220.9	226.0
Restaurants	28.0	44.6	48.1	52.0	55.7	59.3	61.8
All other	72.2	120.0	132.5	135.7	153.5	164.1	164.8
Total food and fiber	354.6	562.3	611.3	602.5	659.8	705.4	701.5
Total domestic economy1/	1,783	3,053	3,166	3,406	3,772	4,010	4,235
				Percent value-added			
Value added:							
Farm sector	2.4	2.2	2.4	1.5	1.7	1.8	1.5
Nonfarm sectors	17.5	16.2	16.9	16.2	15.8	15.8	15.0
Total food and fiber	19.9	18.4	19.3	17.7	17.5	17.6	16.6
Total domestic economy1/	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Totals may not add due to rounding.

Table 32--Annual per capita food consumption, retail weight equivalent, selected years, 1976-86

Item	1976	1983	1984	1985	1986 1/
			1967=100		
Aggregate food consumption index	105.5	105.5	106.8	108.2	108.0
			Pounds per capita		
Food groups:					
Red meat-- 2/	153	144	144	144	142
Beef and veal	88	80	80	81	82
Pork	54	62	62	62	59
Poultry	52	65	67	70	73
Eggs	34	33	33	32	32
Dairy products	322	304	306	309	314
Flour and cereal products	148	148	149	155	165
Fats and oils, including butter	58	63	62	67	67
Fresh fruit	81	88	81	90	91
Fresh vegetables 3/	68	74	79	79	79
Sugars and sweeteners, caloric	132	142	147	153	152

1/ Preliminary. 2/ Red meat includes lamb and mutton. 3/ Data are for lettuce, tomatoes, onions, carrots, celery, corn, broccoli, and cauliflower.

cent during 1967-82. Food consumption data come from information on supply and use of farm products, not from direct measures of consumption. They, in fact, measure disappearance of food from commercial channels.[4]

Beef and veal consumption rose slightly to 82 pounds per person on a retail weight basis in 1986. Pork consumption declined 3 pounds to 59 pounds per person. Poultry consumption continued its long upward trend, increasing about 3 pounds to 73 pounds. The use of dairy products rose because of higher consumption of cheese and low-fat milk products.

Consumers have been altering their consumption of major food groups. Beef and veal consumption fell 16 pounds per person from 1976 to 1986, but pork consumption rose 5 pounds, and poultry consumption increased 21 pounds. This change in consumption patterns partly followed changes in the relative prices of beef and veal, pork, and poultry. Pork and poultry prices have increased much less than beef and veal. During 1976-86, beef and veal prices increased 65 percent, pork 37 percent, and poultry 49 percent.

Per capita egg consumption hit a record low in 1986, but the long-term rate of decline in consumption has slowed in recent years. Dairy product consumption, up about 4 percent since 1982, remained below 1976's level.

Among crop foods, per capita consumption of fresh fruit rose 10 pounds during the past 10 years. Expanded consumption of such noncitrus fresh fruit as grapes and bananas triggered the increase. Consumption of eight major commercial fresh vegetables rose 11 pounds per person during 1976-86 mainly reflecting rising consumption of fresh tomatoes, lettuce, onions, and broccoli. Consumption of fats and oils has increased 9 pounds per person since 1976. Use of salad and cooking oils and shortening increased 4 pounds each, and the use of table spreads and lard declined slightly. Per capita consumption of flour and cereal products was up 10 pounds in 1986 and 17 pounds during 1976-86. Wheat flour consumption increased 7 pounds in 1986 and rice, 3 pounds. Sugar and sweetener consumption climbed from 132 pounds in 1976 to 152 pounds in 1986.

U.S. Agricultural Exports

U.S. agricultural export volume fell sharply in 1986 to its lowest level since 1975. After an unabated decline over the past 6 years, the quantity of agricultural exports in 1986 dropped about 30 pecent from the 1980 peak. Last year saw the value of farm exports fall even more as lower per unit export prices for most major commodities except soybeans accentuated the decreasing value of farm exports. During fiscal year 1986, the total value of agricultural exports dropped 16 percent (table 33), and export volume declined 19 percent (table 34). Foreign sales of U.S. farm output as a share of total production fell to a 14-year low in 1986. Seventeen percent of domestic output was sold abroad last year compared with the peak of 30 percent in 1981 (table 35).

Feed and food grains continue to account for the major volume of exports, providing 60 percent of the fiscal year 1986 total. Corn remained the most heavily traded commodity and experienced the steepest fall in export prices of the major grains. Free-on-board gulf port prices fell an average 21 percent, and volume decreased 10 percent. The rate of decline in foreign purchases of U.S. wheat slowed, with export volume down slightly. The Food Security Act of 1985 prompted wheat price declines by reducing the loan rate to restore vitality to U.S. farm trade. Values of wheat and wheat products exported fell 22 percent to $3.5 billion in 1986 because of continued declines in export volume and lower prices in accordance with current farm legislation.

After falling 13 percent by volume in 1985, foreign purchases of oilseeds and products rebounded by over 5 million tons to exceed the 1984 level. The value of exports of oilseeds and products increased slightly. Gains in the value of soybeans and protein meal offset slippage in soybean oil exports. A major area of stability in U.S. farm exports continued with animals and animal products. Export volume of these commodities rose to the highest level since 1982, second only to the 1981 peak, with export value increasing 7 percent to a record $4.4 billion.

Centrally planned economies accounted for the largest share of the decline in 1986 U.S. agricultural exports. Typically volatile Soviet purchases fell sharply in 1986, accounting for over $1.4 billion of the roughly $4.9-billion total decline. Imports by Japan and newly industrialized Asian countries also declined substantially in 1986 (table 36). Despite some improvements in late 1986, these nations imported 10 percent less than the year earlier. The worst of this trend may be over due to exchange rate adjustments and improved cost-competitiveness of U.S. products (table 37).

Table 38 shows a composite exchange rate index that considers trade volume and domestic inflation rates of importing countries. The indices were real percentage changes in currency units per U.S. dollar. Currencies of 38 countries were weighted by the proportion of U.S. agricultural exports each country purchased and adjusted for inflation relative to the U.S. Consumer Price Index. Agricultural trade indices for each commodity were based on the currencies of countries which imported the commodity.

The real, trade-weighted dollar index declined 5 percent for all U.S. agricultural trade from January 1986 until early 1987. The U.S. dollar depreciated approximately 10 percent against currencies of soybean- and corn-importing countries. During the same period, the trade-weighted dollar for wheat increased in value. Depreciation of the U.S. dollar, as indicated by individual exchange rates and composite indices,

[4]For more detailed and historical information, see U.S. Department of Agriculture, Economic Research Service, *Food Consumption, Prices, and Expenditures, 1985*, SB-749, January 1987.

Table 33--Value of U.S. agricultural exports, selected years, 1981-86

Commodity	1981	1984	1985	1986	Change, 1985-86 1/
	- - - - Billion dollars - - - -				Percent
Grains and feed	21.8	17.2	13.3	9.5	-29
Corn, excluding products	9.9	7.0	5.8	3.3	-43
Wheat, including products	7.7	6.7	4.5	3.5	-22
Rice--paddy, milled	1.5	.8	.7	.6	-14
Other	2.8	2.7	2.3	2.1	-9
Oilseeds and products	9.5	8.4	6.2	6.3	1
Soybeans	6.2	5.4	3.9	4.2	8
Soybean oil	.5	.8	.6	.3	-48
Oilcake and meal	1.7	1.1	.9	1.1	22
Other	1.1	1.1	.8	.7	-12
Animals and products	4.0	4.2	4.1	4.4	7
Hides and skins	1.0	1.4	1.3	1.5	15
Meat and products	.9	.9	.9	1.0	12
Oils, greases, fats	.8	.7	.6	.5	-17
Poultry meats	.5	.4	.3	.3	10
Dairy products	.3	.4	.4	.4	4
Other	.5	.4	.6	.7	17
Cotton, excluding linters	2.3	2.4	1.8	1.7	-11
Fruits and preparations, including juices	1.5	1.2	1.2	1.2	3
Vegetables and preparations	1.4	1.0	.9	1.0	11
Nuts and preparations	.6	.6	.7	.7	-1
Tobacco, unmanufactured	1.4	1.5	1.6	1.3	-19
Total	43.8	37.8	31.2	26.3	-16

1/ Percentage changes are computed from data before rounding and may not correspond to figures shown in table.

Source: U.S. Department of Agriculture, Economic Research Service. Foreign Agricultural Trade of the United States, Fiscal Year 1986 Supplement, pp. 30, 32-33.

Table 34--Volume of U.S. agricultural exports, January-December, 1984-86

Commodity	1984	1985	1986	Change, 1985-86 1/
	- - - - Million tons - - - -			Percent
Grains and feed	110.9	86.9	70.9	-18
Corn	48.9	48.9	43.9	-10
Wheat	42.2	24.8	24.5	-1
Rice	2.2	2.0	2.5	25
All other	17.6	17.6	16.2	-8
Oilseeds and products	27.4	23.7	29.3	24
Soybeans	19.5	16.9	21.4	27
Soybean oil	1.0	1.0	.6	-40
Oilcake and meal	4.6	4.6	4.9	6
All other	2.3	2.3	1.3	-43
Animal products	2.4	2.4	2.5	4
Meat and products	.4	.4	.4	1
Oils, greases, fats	1.3	1.2	1.4	2
Poultry meats	.2	.2	.3	50
Dairy products	.4	.4	.5	25
Cotton, excluding linters	1.5	1.3	1.5	15
Fruits and preparations, including juices	1.5	1.5	1.4	-7
Vegetables and preparations	1.6	1.6	1.4	-12
Nuts and preparations	.4	.4	.5	25
Tobacco, unmanufactured	.2	.2	.2	1
Total	146.8	146.8	118.8	-19

1/ Percentage changes are computed from data before rounding and may not correspond to figures shown in table.

Source: U.S. Department of Agriculture, Economic Research Service, Foreign Agricultural Trade of the United States, January/February 1987, pp. 7-8.

Table 35--Share of U.S. farm production entering foreign markets, 1980-86

Year	Gross cash income 1/	Value of U.S. agricultural exports 2/	Exported share of domestic production 3/
	- - - - - Billion dollars - - - - -		Percent
1980	143.3	40.5	28
1981	146.0	43.8	30
1982	150.5	39.1	26
1983	150.4	34.8	23
1984	155.3	38.0	24
1985	156.6	31.2	20
1986	153.0	26.3	17

1/ Gross cash income is the sum of cash receipts, direct Government payments, and farm-related income. 2/ Total agricultural exports in the fiscal year. 3/ Exported share is the ratio of gross cash income to the value of exports.

Table 36--Principal importers of U.S. agricultural products, 1985-86

Country	1985	1986	1986 rank	Change, 1985-86 1/
	- - Billion dollars - -		Rank	Percent
Japan	5.41	5.11	1	-6
Netherlands	1.87	2.07	2	11
Canada	1.62	1.55	3	-4
South Korea	1.41	1.29	4	-9
Taiwan	1.23	1.16	5	-6
Mexico	1.44	1.08	6	-25
West Germany	.94	1.04	7	11
Egypt	.89	.19	8	-79
Italy	.67	.73	9	9

1/ Percentages may not correspond to rounded quantities shown in the table.

Source: U.S. Department of Agriculture, Economic Research Service. Foreign Agricultural Trade of the United States, January/February 1987, p. 8.

Table 37--Foreign currency units per U.S. dollar, 1984-87

Item	Japanese yen	Dutch guilder	Canadian dollar	Deutsch mark
Average, 1984	237.6	3.209	1.295	2.847
Average, 1985	238.3	3.319	1.365	2.942
Average, 1986	168.4	2.447	1.389	2.170
1986:				
January	199.8	2.746	1.407	2.437
February	184.8	2.632	1.404	2.330
March	178.6	2.565	1.400	2.276
April	174.7	2.560	1.387	2.268
May	166.9	2.505	1.375	2.226
1987:				
January	154.7	2.096	1.360	1.858
February	153.3	2.058	1.334	1.823
March	151.3	2.073	1.319	1.834
April	142.8	2.043	1.319	1.810
May	140.4	2.014	1.341	1.787

Source: U.S. Department of Agriculture, Economic Research Service, World Agriculture Situation and Outlook Report, June 1987, p. 5.

Table 38--Real trade-weighted dollar index of exchange rates, 1986-87

Index	1986				1987
	January-March	April-June	July-September	October-December	January-March
	March 1973=100				
Agricultural trade	88	85	86	89	83
Soybeans	79	75	75	75	69
Wheat	102	101	101	109	109
Corn	82	77	79	80	73
Cotton	95	92	91	92	90

Source: U.S. Department of Agriculture, Economic Research Service, Agricultural Outlook, June 1987, p. 35.

continued into 1987 and improved the outlook for exports of U.S. agricultural products.

The value of exports to developing nations in Africa, Asia, and Latin America (key sources of market growth in the 1970's) declined the most steeply in percentage terms. These markets were relatively small. Costs of U.S. farm products expressed in the currencies of these developing countries have remained high. Shipments to these nations fell by more than $1.8 billion in 1986, accounting for nearly 37 percent of the total decline.

Much of the export decline is attributable to such macroeconomic factors as slow economic growth rates in industrial nations, limited purchasing power due to low prices for primary commodities, continued high value of the dollar compared with local currencies, burdensome levels of foreign debt, terms of structural adjustment loans, and costly debt service obligations. These factors have choked demand throughout much of the developing world.

Effects of Farms' Locations

The location of a farm can affect the viability of a farm household. Two factors of particular importance are the population size of the local area and the dependence of the local area on the agricultural economy.

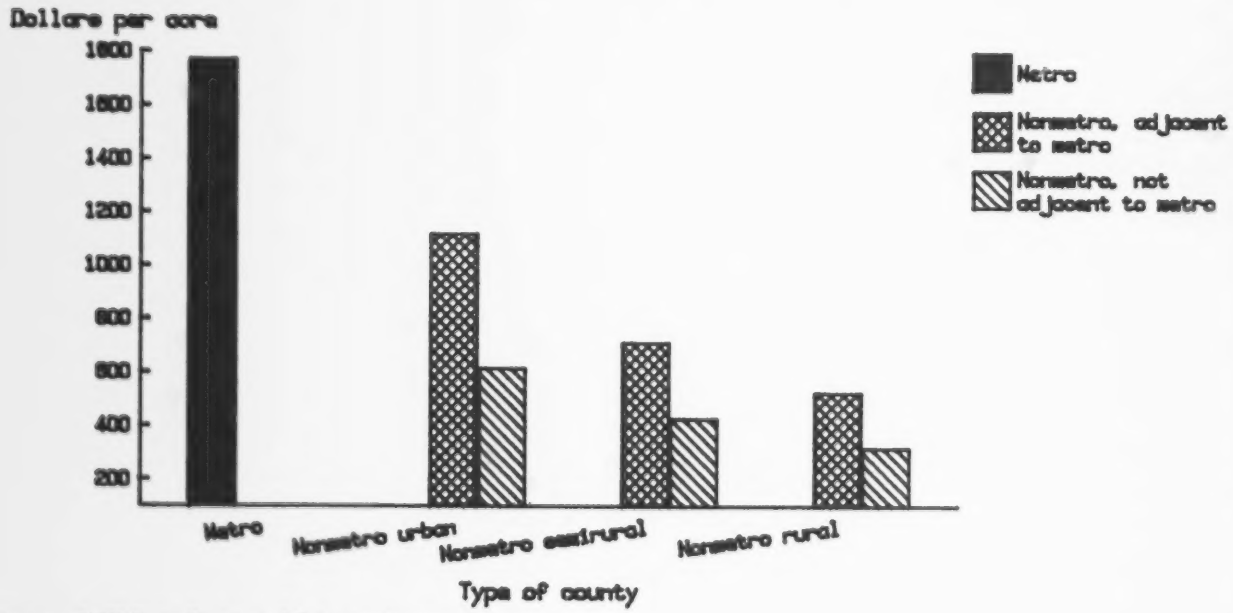
Local Population Size

The local population size affects off-farm employment opportunities. Most farm operator households receive some income from off-farm sources. During the post-1980 period of stress in the farm sector, off-farm income provided a stable source of income to many farm operator households, while some nonagricultural sectors concentrated in nonmetro areas were declining.

Fewer off-farm employment opportunities have been available to nonmetro farm operator households in the 1980's than during the more prosperous decade of the 1970's. Nonmetro areas offer fewer job opportunities than metro areas, so although nonmetro counties are economically diverse, individual nonmetro counties are generally less diverse than individual metro counties. The variety of jobs in nonmetro counties are limited compared with metro counties, and nonmetro areas generally have higher unemployment than metro areas. Nonmetro counties contain more than 70 percent of all farms. Half of these farms, however, are located in counties adjacent to metro areas, providing some households with opportunities outside their own areas but within commuting distance.

Population size affects farmland values. The leverage position of a farm business is significantly affected by the value of real estate assets. The value of land is a function of its ability to generate income. Farmland may be more valuable to the owner in its nonfarm uses. As the size of nonmetro county population rises, the per acre farmland values rises. The value of farmland owned by farm operators in metro counties was about $1,800 per acre in 1986 (fig. 21). Nonmetro counties were divided into three population groups: urbanized (those with an urban population of 20,000 or more), semiurban (those with an urban population of less

Figure 21--Average land value in metro vs. nonmetro counties



Source: 1986 Farm Costs and Returns Survey and Bureau of Economic Analysis.

than 20,000), and totally rural (no places with a population of 2,500 or more). Land values in nonmetro counties adjacent to metro counties were higher than those in nonmetro counties not adjacent to metro counties.

Importance of the Local Farm Economy

The financial well-being of farm operator households varies by location and farm economic conditions affect the well-being of some communities. Many communities dependent on farming are located in areas where fewer nonfarm alternative uses for land and labor are available. The shocks of farm stress affect local businesses and public services.

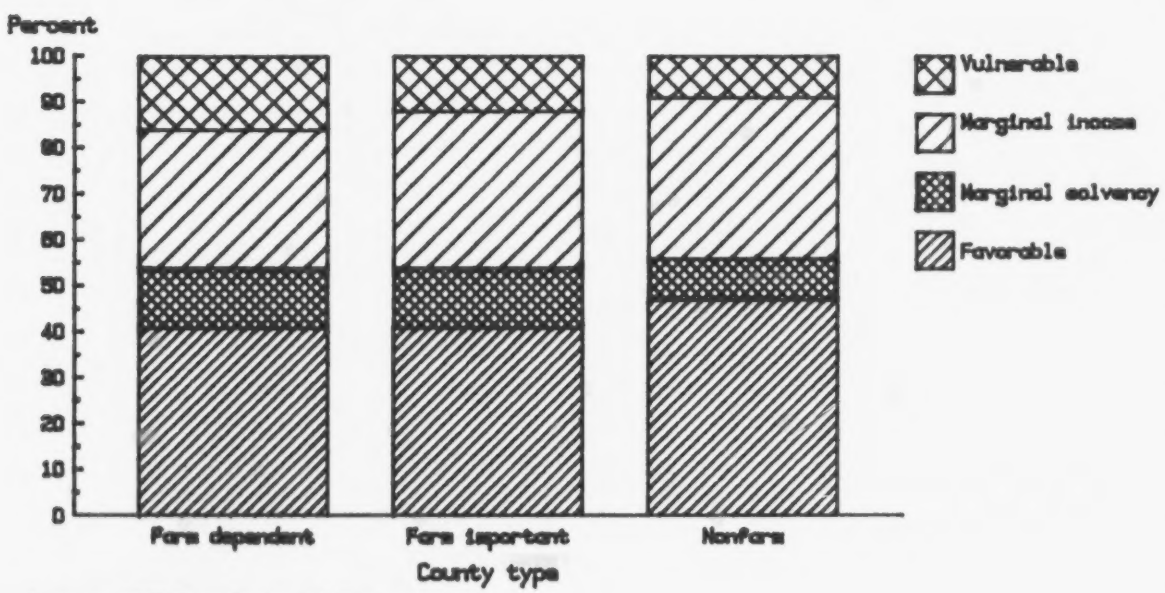
Farm-dependent areas are defined as those with 20 percent or more of county labor and proprietor income from farming. Farm-important areas have 10-20 percent of labor and proprietor income from farming. Nonfarm areas have under 10 percent of labor and proprietor income from farming. A farm household is most vulnerable if the farm debt/asset ratio was 0.40 or more, and the household was unable to meet business and household requirements from all sources of cash income. Farm operator households in either farm-dependent or farm-important areas were more vulnerable to economic problems in 1986 than farms in nonfarm areas (fig. 22). These households were also more likely to have debt/asset ratios above 0.40 but still were more able to meet their cash obligations (marginal solvency) than were farm households in nonfarm areas.

Financial Well-being of Farm Operator Households Compared with all U.S. Households

Farm operators and their households usually have had lower incomes than nonfarm households. Comparison of incomes of farm and nonfarm households is of interest today because of the large transfer of funds from nonfarmers to farmers through Government farm programs and the tax system.

USDA estimates the income of farm businesses and the off-farm income of farm operator households. The Census Bureau estimates the money income of U.S. households but not that of farm operator households. However, the Census Bureau estimates the income of people who live on farms, whether an operator or not. About 20 percent of the operators reside off their farms. The Census Bureau also estimates the income of families which are self-employed, either as operators of unincorporated farms or as landlords receiving share rent. Therefore, no nonfarm operator household estimate exists to compare with the USDA estimate of farm operator household income.

Figure 22—Farm financial position, by county and agricultural dependence, 1986



Sources: 1986 Farm Costs and Returns Survey and Bureau of Economic Analysis.

Inconsistencies exist in the definitions of income. The USDA estimate of farm household income includes non-money items: the value of changes in inventory, the imputed rental value of farm dwellings, and the value of commodities produced and consumed onfarm. USDA's farm operator income estimates do not include wages and salaries that farm businesses pay their own households. U.S. household income estimates include only money items. We adjusted the usual definition of USDA farm operator household income to be consistent with the definition of U.S. household money income as shown in table 39.[5]

The average income of farm operator households was below the national average throughout the 1960's. But, a steady increase in farm operator household income occurred relative to the general population. In the early 1970's, farm operator household income exceeded the U.S. average. From the late 1970's until very recently, farm household income was less than the general population, but in 1985 and 1986, the income of farm operator households was again above the U.S. average. Farm operator households' income averaged $29,436 in 1985 compared with the U.S. income of $29,066, and farm households averaged $34,305 in 1986 compared with $30,759 for the U.S. average.

The gap between average incomes of farm households and nonfarm households has narrowed over time partly because of the increase of off-farm income. This comparison, however, does not address the issue of income distribution. We know that farm income is much more variable than nonfarm income and that farming is a risky occupation. We also know that a higher percentage of farm operator households are below the official poverty level compared with other households.

Traditional USDA estimates of farm sector wealth combine net worths of operators and landlords and exclude nonfarm wealth. Approximately 95 percent of the wealth of farm operator households is tied up in farms. The latest estimates of the total wealth of the general U.S. population are for

[5]An additional, and as yet unresolved, data problem in income comparisons concerns a small percentage of farms, particularly large farms. The farm business returns may be shared by more than one farm operator household.

Table 39--Comparison of the adjusted USDA total income of farm operator households and the average U.S. money income, 1960-86

Year	USDA total income of farm operator households 1/		Adjusted USDA total income of farm 2/ operator households		Average U.S. money income 3/	Income ratio of farm to U.S. population
	Average	Total	Total	Average		
	Dollars	Million dollars	Million dollars	Dollars	Dollars	
1960	4,969	19,693	16,063	4,053	6,627	0.61
1961	5,522	21,120	17,473	4,568	4,471	.71
1962	5,950	21,968	18,097	4,902	6,670	.73
1963	6,380	22,790	18,880	5,286	6,998	.76
1964	6,401	22,129	19,668	5,689	7,336	.78
1965	7,636	25,626	21,292	6,344	7,704	.82
1966	8,548	27,842	24,502	7,523	8,395	.90
1967	8,486	26,834	22,694	7,177	7,989	.90
1968	9,049	27,788	24,107	7,850	8,760	.90
1969	10,302	30,905	27,029	9,010	9,544	.94
1970	10,845	31,983	27,933	9,472	10,001	.95
1971	11,758	34,122	28,506	9,823	10,383	.95
1972	14,238	40,722	35,259	12,328	11,286	1.09
1973	20,925	59,070	50,402	17,854	12,157	1.47
1974	19,822	55,402	50,881	18,204	13,094	1.39
1975	19,614	49,447	39,564	15,694	13,779	1.14
1976	18,765	46,856	41,107	16,463	14,922	1.10
1977	18,730	46,002	36,511	14,866	16,100	.92
1978	22,538	54,902	43,738	17,955	17,730	1.01
1979	25,207	61,254	45,677	18,797	19,554	.96
1980	20,891	50,829	44,851	18,434	21,063	.88
1981	25,751	62,678	42,379	17,411	22,787	.76
1982	24,965	59,941	49,081	20,442	24,309	.84
1983	20,975	49,710	48,877	20,623	25,401	.81
1984	30,215	70,340	52,023	22,347	27,464	.81
1985	32,908	74,865	66,968	29,436	29,066	1.01
1986	37,125	82,195	75,820	34,246	30,759	1.11

1/ Total income equals net farm income plus off-farm income. 2/ Excludes nonmoney income and expense items and includes the wages and salaries farm operator households pay themselves. 3/ For 1960-66, data are for families and for 1967 and forward, data are for households.

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, various years.

1984.[6] Based on USDA survey data, we do know the average farm wealth of operators in 1986.

When we compare this estimate with the 1984 average wealth of U.S. households from all sources, we find that farm operator households have higher levels of wealth on average than U.S. households, despite significant declines in land values since 1981. The farm wealth of farm operator households averaged about $225,000 in 1986. The average wealth of U.S. households in 1984 was $78,739. The wealth of farm operator households is greater than the wealth of U.S. households at all levels of income.

PROJECTIONS FOR 1987-88

This section includes estimates of enterprise costs and returns for 1986, forecasts for 1987, and the outlook for cash receipts, expenses, income, and equity. While many Government policies affect the farm sector, we concentrate on only two aspects of policy in this section: issuance of generic commodity certficates and tax reform.

Enterprise Costs and Returns

Production costs and returns at the commodity level determine the financial status of the individual enterprise rather than of the whole farm (which is usually a mix of several enterprises). The costs are national averages for crop and livestock production based on an average acre of land, animal unit, or hundredweight (cwt) of production. Costs-of-production (COP) estimates are indicators of year-to-year changes in production costs, and as such, do not assess either a farm's total income (from multiple enterprises) or a particular farm operator's current cash situation. COP estimates are based on a set of national and regional budgets produced and updated by computerized budget-generator and aggregation programs. These budgets are, in turn, based primarily on data from producer surveys repeated every 4 or 5 years, for each major commodity. We determined annual crop yields on a planted-acre basis, and prices received by farmers at time of harvest. Livestock prices and yields are season averages.

USDA procedures for estimating enterprise receipts omit direct Government payments because participation in the various programs is voluntary, and each program contains special provisions for compliance. The product price is supported by the Government through direct market intervention for such commodities as peanuts, milk, sugar, and wool. The value of production for these commodities reflects the combined effects of market price and Government intervention. Shortrun net cash returns to the enterprise can be estimated, as can longrun returns to management and risk, with the addition of enterprise receipts (estimated gross value of production). Following are interpretations of commodity COP and returns:

- CASH RECEIPTS—Are the estimated gross value of production of primary and secondary output. This estimate does not correspond to the cash receipts of the income accounts. Both the quantities and prices differ. In this estimate, the quantities are those which are produced during a calendar year and the prices are those for crops at the time of harvest. In the income accounts, quantities are for those commodities which are sold, regardless of when they are produced, and prices are season average prices.

- CASH EXPENSES—Reflect the shortrun out-of-pocket variable and fixed costs. They are equivalent to the minimum break-even crop or livestock value needed to maintain an average acre or livestock unit in production.

- CAPITAL REPLACEMENT—Represents an estimate of the value of the machinery, equipment, and breeding stock used up during the year plus the additional cost required to bring these items up to the same level of quality and/or quantity that they were at the beginning of the period.

- SHORTRUN RETURNS—Provide a measure of the potential cashflow position of producers as measured by receipts less cash expenses.

- TOTAL ECONOMIC COSTS—Provide a full accounting of both cash and noncash costs, regardless of tenure or equity. They are equivalent to the longrun break-even crop or livestock value necessary to continue production.

- RETURNS TO OWNED INPUTS—Reflect an allocation of cash needed for paying the farmer's owned inputs after all cash costs are paid and capital is replaced to the preproduction level.

- RESIDUAL RETURNS TO MANAGEMENT AND RISK—Are the longrun economic indicators used to assess relative returns among enterprises.

Tables 40 and 41 contain estimated costs and returns for major crop and livestock enterprises in 1986 and 1987. Cash receipts per acre fell for all crops except peanuts, sugar beets, and sugarcane. Declining feed costs and higher hog prices helped many hog producers' returns exceed expenses. Sheep ranchers saw strengthened returns mainly because of reduced expenses. The drop in feed costs helped fed beef producers improve net cash returns (receipts less expenses) despite their lowest receipts since 1978.

Costs and Returns per Acre

Corn—Cash costs of production for U.S. corn fell an average 8.6 percent in 1986, totaling $190 per planted acre. Contributing the most to this decrease were: a 28-percent

[6] U.S. Department of Commerce, Bureau of the Census, "Household Wealth and Asset Ownership: 1984," *Current Population Reports*, Series P-70, No. 7., July 1986.

Table 40--Costs and returns for major U.S. crops, 1986-87 1/

Item	Corn (bu)		Sorghum (bu)		Barley (bu)	
	1986	1987	1986	1987	1986	1987
	Dollars/planted acre					
Total cash receipts (excluding direct Gov't. payments)	165.17	186.95	87.15	110.56	68.16	76.00
Cash expenses:						
Total variable 2/	118.74	116.20	59.25	58.60	44.97	44.36
Total fixed 3/	70.83	70.24	32.27	32.37	33.69	33.67
Total cash expenses	189.57	186.44	91.52	90.97	78.66	78.02
Receipts less cash expenses	-24.40	.51	-4.37	19.58	-10.50	-2.02
Capital replacement	33.71	35.27	26.99	28.24	23.34	24.42
Receipts less cash expenses and replacement	-58.11	-34.76	-31.36	-8.65	-33.84	-26.44
Economic (full ownership) costs:						
Cash expenses (less interest)	150.92	149.86	76.37	76.54	62.44	62.62
Capital replacement	33.71	35.27	26.99	28.24	23.34	24.42
Allocated returns to owned inputs:						
Net land rent	32.19	34.60	17.45	21.51	17.32	18.46
Unpaid labor	13.63	14.29	11.84	12.42	8.86	9.30
Capital (operating and other nonland)	9.37	9.35	6.82	6.95	5.15	5.27
Total, economic costs	239.82	243.38	139.47	145.66	117.11	120.07
Residual returns to management and risk	-74.65	-56.43	-52.32	-35.10	-48.95	-44.08
	Dollars/bushel, cwt, or lb					
Harvest-month price	1.40	1.56	1.39	1.64	1.40	1.52
	Bushel, cwt, or lb					
Yield per planted acre	117.69	119.46	62.90	67.41	45.45	46.80

	Wheat (bu)		Rice (cwt)		Cotton (lb)	
	1986	1987	1986	1987	1986	1987
	Dollars/planted acre					
Total cash receipts (excluding direct Gov't. payments)	68.58	83.14	225.65	192.26	265.64	N/A
Cash expenses:						
Total variable 2/	44.36	43.82	242.85	241.74	193.19	201.04
Total fixed 3/	30.77	30.78	71.72	71.59	65.33	65.05
Total cash expenses	75.13	74.60	314.57	313.33	258.52	266.09
Receipts less cash expenses	-6.55	18.54	-89.92	-121.07	7.12	N/A
Capital replacement	19.44	20.34	51.50	53.88	41.24	43.15
Receipts less cash expenses and replacement	-25.99	-1.80	-141.42	-174.95	-34.12	N/A
Economic (full ownership) costs:						
Cash expenses (less interest)	59.84	60.07	279.29	279.61	224.35	233.54
Capital replacement	19.44	20.34	51.50	53.88	41.24	43.15
Allocated returns to owned inputs:						
Net land rent	15.39	19.57	31.63	27.87	44.31	47.23
Unpaid labor	9.29	9.75	27.08	28.40	20.72	21.74
Capital (operating and other nonland)	4.78	4.81	14.36	14.43	10.40	10.55
Total, economic costs	108.75	114.53	403.86	404.20	341.02	356.19
Residual returns to management and risk	-40.17	-21.39	-179.21	-211.94	-75.38	N/A
	Dollars/bushel, cwt, or lb					
Harvest-month price	2.26	2.72	4.01	3.53	.50	N/A
	Bushel, cwt, or lb					
Yield per planted acre	28.55	32.56	55.98	54.47	461.44	564.57

See footnotes at the end of this table.

continued--

Table 40--Costs and returns for major U.S. crops, 1986-87--continued 1/

Item	Soybeans (bu)		Sunflowers (cwt)		Peanuts (lb)	
	1986	1987	1986	1987	1986	1987
	Dollars/planted acre					
Total cash receipts (excl. direct Gov't. payments)	150.07	171.69	83.99	75.59	653.00	673.64
Cash expenses:						
Total variable 2/	52.04	51.49	46.37	45.30	274.65	294.73
Total fixed 3/	51.88	51.41	33.79	33.40	100.62	98.82
Total cash expenses	103.91	102.90	80.16	78.70	375.28	393.55
Receipts less cash expenses	46.16	68.78	3.83	-3.11	277.72	280.09
Capital replacement	24.54	25.67	18.64	18.50	50.23	52.55
Receipts less cash expenses and replacement	21.62	43.11	-14.81	-22.61	227.49	227.54
Economic (full ownership) costs:						
Cash expenses (less interest)	75.35	75.88	61.00	60.50	314.05	335.89
Capital replacement	24.54	25.67	18.64	19.50	50.23	52.55
Allocated returns to owned inputs:						
Net land rent	44.49	48.28	20.16	18.94	87.91	87.65
Unpaid labor	10.16	10.66	7.47	7.84	26.24	27.53
Capital (operating and other nonland)	5.51	5.58	4.53	4.58	15.41	15.69
Total, economic costs	160.06	166.07	111.80	111.36	493.84	519.31
Residual returns to management and risk	-9.99	5.62	-27.81	-35.77	159.16	154.34
	Dollars/bushel, cwt, or lb					
Harvest-month price	4.57	5.09	6.35	6.85	.27	.24
	Bushel, cwt, or lb					
Yield per planted acre	32.85	33.76	13.23	10.88	2,364	2,712

N/A=not available.
1/ Preliminary 1986 and forecast 1987. 2/ Includes: seed, fertilizer, lime, chemicals, custom operations, fuel and lubrication, repairs, drying, ginning, hired labor, purchased irrigation water, and management fees. 3/ Includes: taxes and insurance, general overhead, and cash interest paid on all loans.
4/ Cotton price forecasts not available.

Table 41--Costs and returns for major U.S. livestock enterprises, 1986-87

Item	Cow-calf		Fed beef		Sheep	
	1986	1987	1986	1987	1986	1987
	Dollars/cow		Dollars/cwt		Dollars/ewe	
Total cash receipts	262.48	284.03	58.38	63.39	64.62	79.37
Cash expenses:						
Total variable 2/	160.37	157.75	53.98	57.18	27.77	27.52
Total fixed 3/	76.79	74.78	4.39	4.13	9.27	9.09
Total cash expenses	237.16	232.53	58.37	61.31	37.04	36.61
Receipts less cash expenses	25.32	51.50	.01	2.08	27.58	42.76
Capital replacement	63.69	64.76	1.02	1.04	7.49	7.62
Receipts less cash expenses and replacement	-38.37	-3.26	-1.01	1.04	20.09	35.14
Economic (full ownership) costs:						
Cash expenses (less interest)	196.18	194.60	54.58	57.80	32.71	32.60
Capital replacement	63.69	64.76	1.02	1.04	7.49	7.62
Allocated returns to owned inputs:						
Land	57.82	56.72	.05	.05	4.42	4.34
Unpaid labor	82.08	86.10	.44	.46	8.12	8.52
Capital (operating and other nonland)	28.22	28.48	.87	.93	3.61	3.66
Total, economic costs	427.99	430.66	56.96	60.28	57.35	56.73
Residual returns to management and risk	-165.51	-136.63	1.42	3.11	8.27	22.64

Item	Feeder-pig producer		Farrow-to-finish hogs		Milk	
	1986	1987	1986	1987	1986	1987
	Dollars/cwt					
Total cash receipts	85.29	96.19	50.47	51.02	13.36	13.47
Cash expenses:						
Total variable 2/	49.56	47.42	28.34	26.13	7.14	7.27
Total fixed 3/	14.73	14.20	8.59	8.27	2.04	2.08
Total cash expenses	64.29	61.62	36.93	34.40	9.18	9.36
Receipts less cash expenses	21.00	34.57	13.54	16.62	4.18	4.12
Capital replacement	11.69	11.89	5.58	5.67	1.46	1.41
Receipts less cash expenses and replacement	9.31	22.68	7.96	10.95	2.72	2.71
Economic (full ownership) costs:						
Cash expenses (less interest)	55.06	53.08	31.43	29.31	7.94	8.11
Capital replacement	11.69	11.89	5.58	5.67	1.46	1.41
Allocated returns to owned inputs:						
Land	.39	.38	.08	.08	.28	.26
Unpaid labor	16.65	17.47	4.36	4.57	1.54	1.56
Capital (operating and other nonland)	3.45	3.50	1.54	1.57	.48	.57
Total, economic costs	87.24	86.32	42.99	41.21	11.70	11.90
Residual returns to management and risk	-1.95	9.87	7.48	9.81	1.66	1.57

1/ Preliminary 1986 and forecast 1987 data. 2/ Includes: feed, veterinary fees and medicine, marketing, bedding, custom feed mixing, fuels, machinery and building repairs, hired labor, and manure credit. 3/ Includes: taxes and insurance, general overhead, cash interest paid on all loans, and hired management.

fall in energy expenses, a 12-percent fall in interest payments, and an 11-percent fall in fertilizer costs. Only technical services and taxes showed higher costs, but the actual increase averaged only 31 cents.

The U.S. planted-acre yield, at 117 bushels, remained about the same as in 1985. However, with the price at $1.40 per bushel, estimated cash receipts were $165, down from $253. The lower expenses helped some, but net returns still dropped considerably. Net cash returns before subtracting any costs for capital replacement went from $45 in 1985 to minus $24 in 1986. After we subtracted capital replacement, the amount became minus $58. Residual returns to management and risk fell to minus $75.

Preliminary forecasts for 1987 show another decline in cash expenses of 1.7 percent. Yields should increase slightly and harvest-month prices could rise to $1.56, pushing receipts to $187 per acre. Although these are positive effects, all net return indicators will still be near zero or negative.

Grain sorghum—Total cash production expenses for the average acre of grain sorghum declined 7 percent to $92. Fertilizer and fuel expenses fell the most, while machinery repairs and capital replacement costs increased. Farmers' overhead and interest payments declined 10 percent which offset the increase in capital replacement costs and triggered a 5.6-percent drop in fixed costs.

Average planted-acre yields for States included in the COP program fell by slightly over a bushel, but harvested yield for the entire country was a record high. Harvest-month prices averaged $1.39 per bushel, a 27-percent decline, giving an estimated value to the crop of $87.15 per planted acre. Subtracting costs from these receipts left minus $4 in cash before capital replacement and minus $31 afterwards. Minus $52 remained to the operator's management and risk after estimating total economic costs, the lowest level in the 12 years of the COP project.

Cash expenses will probably fall in 1987 but by less than 1 percent. Sizable increases in prices and yields, however, could translate into $20 in net cash returns before capital replacement, the highest level of any of the feed grains.

Barley—U.S. barley's cash production costs fell an average 12 percent. Fertilizer, fuel, and interest expenses showed the greatest declines. Variable expenses fell to $45 from $53, and fixed expenses dropped from $37 to $34. Yield increased about one-half bushel, but the average harvest price fell 25 percent to $1.40 per bushel, which in turn, brought receipts down 22 percent, an average $68 per planted acre. A decline in net returns continues. The financial position of barley will mirror that of grain sorghum, with a very small decline in per-acre cash expenses. We forecast net returns to improve for barley acres but not by as much as for corn and sorghum.

Wheat—U.S. wheat cash production costs fell an average 12 percent to their lowest level since 1980. Variable expenses amounted to $44 and fixed expenses, $31; total economic costs were $109. Yield was down 10 percent and price fell 23 percent, so estimated receipts went from $97 in 1985 to $69 in 1986. Wheat farmers could not cover even cash expenses. Net returns were minus $7 before capital replacement, minus $26 after. Longrun returns to management and risk fell to minus $40.

Winter wheat prices, up for 1987 as are yields, should spur improved receipts. Cash expenses for producing wheat will likely fall by 53 cents per planted acre, but we forecast a $19 net cash return. So, even with a 5-percent increase in economic costs, residual returns to management and risk should improve by nearly 50 percent.

Rice—Farm legislation in 1985 had a major effect on 1986 rice COP receipts and returns by providing marketing loans and certificates to producers and by reducing U.S. rice prices to near the world level. The results of the legislation fell outside the harvest-period prices used in the COP accounts and are not included here. As a result, net COP rice returns are difficult to interpret, particularly compared with other crops.

Average yields increased 2.2 hundredweight (cwt) in 1986, causing drying costs to increase to $36. Other fuel costs, however, fell to $27 per acre, causing total variable expenses to go from $256 in 1985 to $243 in 1986. Interest expenses fell $5 per acre, and fixed expenses totaled $72. All cash expenses were $315, and economic costs fell to $404.

Continued declines in harvest-month rice prices are forecast for 1987, and yields could fall by 150 pounds per acre, meaning probably even lower returns to rice acres, even though input expenses are still falling.

Cotton—U.S. cash production costs dropped 15 percent as variable expenses averaged $193 and fixed expenses, $65. Chemicals were the largest single cash expense item, $50, followed by ginning, $43. Estimated receipts fell 27 percent to $266 from $364 because of lower yields (particularly in the Southeast) and lint prices. Although economic costs fell an average 15 percent, mainly because of lower imputed land costs, residual returns to management and risk were minus $75.

The 1987 yield forecast is 565 pounds per planted acre, up 22 percent, meaning higher harvesting (ginning) costs for cotton, which outweigh any lower input prices. Total cash expenses will likely average $266 per planted acre, compared with $259 in 1986. Total economic costs could reach $356 by the end of the year.

Soybeans—U.S. soybean costs averaged $104 per planted acre in 1986, down 7 percent. The highest expense was for cash interest payments, $29, and chemical expenses, $19. Average soybean prices and yields were down, producing estimated receipts of $150. However, cash costs fell by about

the same amount as receipts, so net cash returns before and after capital replacement remained about the same from 1984 ($50 and $26) through 1986 ($46 and $22). Cash returns were positive, except after capital replacement costs in the Delta and Southeast. Total economic costs averaged $160, with residual returns to management and risk of minus $10, down $3.

Yields and prices for soybeans should rise in 1987, resulting in estimated receipts of $172. Net cash returns will continue rising, with slightly lower input expenses, and residual returns to management and risk averaging $5.62 per planted acre.

Sunflowers—Sunflower yields reached their highest level since COP estimates began in 1979, while prices dipped to their lowest level. Estimated receipts declined to $84, down from $108. Fertilizer costs totaled $8, with fuel costs dropping by nearly 50 percent. Variable cash expenses totaled $46, and fixed cash expenses totaled $34. Net returns were positive, $4, before capital replacement but minus $15 after capital replacement. Residual returns to management and risk fell to minus $28 per planted acre, with total economic costs of $112. We see yields declining in 1987. Higher sunflower prices and lower input expenses will not be able to overcome the lower production, and returns will fall.

Peanuts—Peanut cash production costs fell an average 4.1 percent in 1986, much less than with most other crops. Several factors accounted for the decline. Seed costs typically average 20-25 percent of variable cash expenses, but seed costs increased 10 percent to $65 per planted acre.

Fertilizer costs fell but by only 52 cents per acre, and chemical costs increased slightly. Fuel and drying costs showed sizable declines. Total variable expenses, however, fell 2.9 percent to $275, while fixed expenses fell to $101. Net cash returns before capital replacement totaled $278 and after capital replacement, $227. Total economic costs were $494, leaving $159 to management and risk. These returns were high compared with other crops and can be explained in part by the Government support program's effect on the harvest-period price. Peanut prices are supported through direct market intervention, so the COP definition of receipts and returns differs from that of other crops.

The 1987 average U.S. peanut yield should rebound, averaging over 2,700 pounds per planted acre, while peanut prices may fall to 24 cents per pound. Higher estimated cash receipts will probably be canceled out by an equal increase in input costs, leaving returns at about the 1986 level.

Costs and Returns for Livestock Enterprises

Cow-calf—Net returns in 1986 for beef cow-calf producers were positive for the first time since 1980 because of an increase in receipts and a decline in cash expenses. Cash expenses averaged a 9-percent drop while cash receipts from the sale of feeder cattle and cull breeding stock rose by 3 percent. Cash returns averaged about $25.32 compared with minus $6.10 per cow in 1985.

Lower costs for feed (mainly grain, hay, and pasture) combined with a decline in fixed expenses to account for most of the $23-per-cow decline in cash expenses. Grain costs fell by about 36 percent, hay expenses were 20 percent lower, and all the pasture costs averaged 5 percent less, depressing total feed costs to just below $100 per cow, $4 per cow less than in 1985. The costs of veterinary fees and medicine, marketing, and hired labor increased slightly. Sharp declines that averaged $5.48 per cow (down 34 percent) affected fuel, lube, and electricity expenses, causing total variable expenses to fall by more than $19 per cow from the $179.67-per-cow cost in 1985.

Fixed expenses were $76.79 per cow, $4.03 per cow below 1985 fixed costs, largely because of lower interest rates. However, 1986 marked the sixth consecutive year in which cash expenses plus the cost of replacing capital consumed in the production process exceeded cattle sales, which reduced the incentive for a sharp, broad national expansion in beef cow-calf breeding herds.

Feed costs should continue falling in 1987, so cash expenses could go down to $233 per cow. Higher prices for calves will push receipts up by 12 percent, which will translate into much-improved returns. The largest cost increase will be in labor expenses.

Fed beef—Net cash returns (receipts less cash expenses) improved despite having receipts at their lowest level since 1978. Cattle feeders' cash receipts were minus 1 cent per cwt in covering cash expenses in 1986 compared with losses of $1.55 and $3.99 in 1984 and 1985. Declines in almost all cash expenses of over $5 per cwt more than offset the nearly $1-per-cwt drop in slaughter cattle prices. Prices for choice slaughter steers in the first quarter of 1986 averaged just above $57 per cwt but dropped to about $54.50 per cwt in the second quarter. Prices rebounded in the third quarter to just below $59 per cwt and increased to above $60 per cwt by the end of 1986.

Nearly all of the cash expenses associated with average fed cattle production were below 1985 expenses. Prices paid for feeder cattle dropped an average $2 per cwt of fed beef sold. Feed costs fell by $2.50 per cwt, led by a 19-percent drop in dry grain and legume hay expenses. Feed cost declines, lower feeder cattle costs, and slightly lower expenses for other variable expenses pushed total variable expenses down to $54, more than a $4 drop.

Cash expenses will rise by $2 per cwt in 1987, but higher beef prices will give the average feeder all positive returns, including longrun residual returns to management and risk of $3.11.

Sheep—U.S. sheep producers earned higher net returns (receipts less cash expenses) because of lower cash expen-

ses. Total cash expenses averaged about $37 per ewe, down $2 per ewe from a year earlier. Cash receipts from the sale of slaughter and feeder lambs, cull ewes, wool, and unshorn lamb and wool Government payments were down $1.54 per ewe. Producers received lower prices for slaughter lambs and cull ewes. Improved 1986 and 1985 returns led to increased stock sheep inventories during 1986. The inventory of all sheep and lambs on farms January 1, 1987, totaled 10.33 million head, up 3 percent.

Cash expenses will trend downward for 1987, but lamb prices should reverse and total cash receipts could rise to as much as $79 per ewe. This will probably mean net returns of $43 before capital replacement and residual returns to management and risk of $23 per ewe.

Hogs—Higher hog prices and lower feed costs combined to push hog producers' returns above cash expenses to their highest point since 1982. Hog producers covered both total cash and capital replacement costs for the first time since 1982. Farrow-to-finish hog operation returns less cash expenses were $13.50 per cwt, an increase of about $9 per cwt. Farrow-to-finish operations accounted for 75 percent of slaughter hog production.

For the second consecutive year, cash expenses for hog producers declined by nearly 7 percent. Grain costs fell more than 22 percent while protein supplements increased 8 percent, causing all feed costs to decline from nearly $25 per cwt in 1985 to $22 per cwt in 1986. Other variable expenses were also below the previous year estimates but were more than offset by higher general farm overhead and interest expenses.

Cash expenses should fall in 1987 for both feeder-pig producers and for farrow-to-finish operators. Receipts should increase, especially for sales of feeder pigs. Returns to feeder pigs should average $35 per cwt before capital replacement and $23 after.

Dairy—Dairy enterprise cash receipts from the sale of fluid milk, cull cows, calves, and dairy replacement stock dropped 2 percent to $13.36 per cwt of milk in 1986. The price received for milk dropped 22 cents per cwt and the value of dairy animals sold fell 5 cents per cwt, resulting in the lowest cash receipts since 1978. In constant (1972) dollars, 1986 cash receipts were the lowest since 1975.

Milk output per cow increased by 3,240 pounds. This increase, accompanied by a decline of $13.68 in forage costs and $24.24 in fixed costs per cow, caused total cash expenses per cwt to fall 23 cents and total economic costs per cwt to fall 21 cents. Only concentrate and dairy assessment costs increased. Concentrate expenses increased $18.52 per cow. A 40-cents-per-cwt assessment from April through December helped pay for the Dairy Termination Program, and a 12-cents-per-cwt assessment from April through September met the Gramm-Rudman-Hollings budget reduction requirement. These assessments averaged 36 cents per cwt over the entire year, up 23 cents from the 1985 annual average.

The margin between cash receipts and cash expenses plus the capital replacement charge at $2.72 per cwt was the widest since 1982. Decreases in costs about matched the declines in revenue to prompt slight improvement. In constant 1972 dollars, 1984-86 showed the lowest cash returns (cash receipts less cash expenses plus capital replacement) during 1975-86. The residual return to management and risk fell 6 cents to $1.66 per cwt.

Receipt increases in 1987 should equal input expense increases and net cash returns will be near their 1986 levels. However, 1987 costs will rise more than receipts, leaving residual returns to management and risk of $1.57 per cwt.

Cash Receipts, Expenses, and Income in 1987

The farm sector reached an important crossroads in 1987. The 1985 farm act finished its first full crop year cycle, farm debt continued to fall, land values stabilized and even increased in many areas, export volume began to turn upward, and some commodity stock levels declined. Some of the key events which will have influenced the financial well-being of the sector in 1987 include:

- Significant reductions in outstanding debt and interest costs.
- Increased direct Government payments, both cash and certificate.
- Another decline in crop prices with crop farm income protected by subsidies.
- Improved receipts and incomes for many livestock producers.
- Declines in farm input use, prices paid, and expenses.
- An arresting of the decline in land values.
- Projection of the highest income return to equity since 1975.
- Continued strong cash income and flow with the aid of direct payments.
- The first increase in farm equity since 1980.

These key variables are largely positive in nature and suggest the farm sector may realize concurrent gains in both net income and equity for the first time since 1979. Gainers among specialized farm types in 1987 are likely to include wheat, cotton, vegetable, cattle, hogs, and dairy. Farm types that may experience diminished income performance include specialized corn, rice, and poultry producers. However, al-

most all farm types will experience some improvement in their balance sheets as assets stabilize and debt continues to decline. Livestock farms (except poultry) are likely to improve income performance the most in 1987 due to a combination of stronger meat prices and reduced expenses, especially for feed.

Gross income may not be substantially different in 1987 because higher direct payments and stronger livestock receipts will offset reduced crop receipts. However, net incomes will likely receive a boost from further reductions in production expenses. Net cash income may range from $54-$58 billion in 1987, up from $52 billion in 1986. We adjusted net cash income for inflation and determined that real net cash income may increase for the fourth consecutive year.

Cash Receipts

Cash receipts from open market sales and net CCC loans are expected to total $131-$133 billion, down from $135.2 billion in 1986. Crops will probably account for most of the decline, as in 1986, with livestock enjoying a second consecutive strong year. Sharply lower prices for program commodities caused 1986 cash receipts to register their largest percentage reduction since 1949. With production, prices, and loan rates falling even more in 1987, another drop in receipts will likely be caused by:

- Lower CCC loan rates.
- Reduced open market prices received for many crops.
- Smaller marketing volumes.
- Declining poultry and milk prices.

We expect crop receipts to fall to $58-$60 billion as prices received fall 3-5 percent and output declines 1-2 percent. Farmers will probably redeem more CCC loans than are placed during calendar year 1987 because marketing certificates provide an easy avenue for "redeeming" commodity loans. Despite this heavy CCC activity, feed grain receipts will likely fall the most in 1987, while receipts from some commodities, such as cotton and vegetables, will probably increase.

Livestock farmers, especially red meat producers, will probably see one of their best years since 1979. Significantly higher prices for cattle and continued strong hog prices outweigh a restrained performance by poultry and dairy to boost total livestock sector cash receipts to $73-$75 billion. After a strong 1986, reduced prices will dampen poultry receipts. Output will rise for the second consecutive year. Livestock receipts may dim in 1988 as continued gains in output outweigh what markets can absorb, resulting in noticeably reduced prices.

Direct Payments

The two most important economic factors determining farm income in 1987 will have been declining farm production expenses and large direct Government payments. Direct payments will likely have climbed $2-$3 billion due to:

- Stronger participation rates for corn and rice producers.
- Continued strong deficiency payment rates.
- The addition of paid land diversion for feed grains.
- Increased participation in the Conservation Reserve program.
- Disbursal of 1986-crop disaster payments.
- The one-time Conservation Reserve sign-up bonus for corn.
- Advancement of 1987-crop payments, normally paid during 1988.
- Continued disbursal of Dairy Termination Program payments.

Direct payments may approach $15 billion in 1987 despite declining cash payments. The value of marketing certificates is substantially above the $3.7 billion of 1986. The face value of certificates issued to satisfy deficiency, diversion, disaster, and conservation reserve obligations ranges from $7 billion to $9 billion. Direct payments will likely continue at very high levels through 1988.

Production Expenses

Production expenses will have fallen for the third consecutive year in 1987. A combination of stable input prices and reduced input use (caused mainly by reductions in acres planted) will likely have dropped total expenses to their lowest current dollar level since 1978. The farm sector's expenses have declined by $25 billion since peaking in 1984 at $142.7 billion because of reduced acres planted, conservative production practices by farmers, lower input prices, reduced capital outlays, reductions in farm debt, and lower interest rates. Some of the expense highlights for 1987 include:

- The fifth consecutive decline in interest expenses as debt continues to fall.
- The fourth consecutive decline in feed expenses as corn prices remain low.
- A decline in fertilizer and lime expenditures as they fall to their lowest level since 1973 as use and prices plummet again.
- A decline in depreciation for an unprecedented fifth consecutive year as capital investment continues to dwindle.

- A 10-percent surge in feeder and replacement livestock purchases as competition for feeder animals continues strongly.

Farmers withdrew about 20 million additional acres from production in 1987, which had the most effect on outlays for acreage-dependent inputs, such as fertilizer, fuels, pesticides, and seed. Nonreal estate interest expense declined because of lower operating credit requirements accompanying the big drop in acres planted. Fertilizer use declined significantly because corn growers, heavy users of fertilizer, contributed most to acreage cutbacks. Corn production accounts for close to half of all fertilizer used.

Substantial declines in farm production expenses have combined with increased direct payments in maintaining the incomes of many farmers. Expenses will likely have fallen 4-6 percent in 1987 showing their steepest decline since 1953 during 1986.

Balance Sheet Forecasts for 1987

The projected farm sector balance sheet will exclude assets and liabilities associated with the farm household to be consistent with preceding income forecasts. Annual financial indicators discussed here reflect estimates of market values of total assets, debts, and net worth as of December 31.

The national average rate of decline in the value of real estate assets fell from over 12 percent to 8 percent in 1986. We forecast farm real estate values to remain unchanged at $510-$520 billion in 1987, which would end 4 consecutive years of decline. The slowed rate of devaluation and projected stabilization in real estate assets reflect strengthening land values. Higher farm earnings, debt paydown, and growth in the livestock subsector have bolstered confidence in the the farm sector's financial performance. Therefore, trends in production expenses and Federal payments, key factors in recent income strength, will continue to influence land values over the next several years.

Nonreal estate assets, which in 1986 accounted for an estimated 28 percent of total assets, continued declining in 1987, the fifth consecutive year. We expect the value of crops in storage (including CCC loan collateral) to fall again, perhaps $10 billion below the 1985 level, accounting for most of the downturn in nonreal estate assets. Livestock and poultry holdings may rise for the second straight year to $48-$50 billion. Financial assets will increase approximately $1 billion. Continued declines in the value of machinery and motor vehicle assets will likely range from $2 billion to $4 billion in 1987.

The fifth consecutive year of falling total farm liabilities was forecasted for 1987. After peaking at nearly $104 billion in 1984, real estate debt (excluding households) has fallen steadily and may dip to $82-$84 billion in 1987. The relative shares of major lending institutions have changed within the diminishing stock of outstanding real estate liabilities.

Federal land banks may see their share of farm real estate debt fall from 43 percent in 1984 to 35 percent during 1987. Less attractive terms, problems of credit availability, and a decline in land purchases have contributed to these banks' reduced loan portfolios.

Commercial banks have increased their real estate loan portfolio about 60 percent (to $12-$13 billion) and their share of loans secured by real estate from 8 percent in 1982 to 15 percent projected for 1987. Some of this growth is likely due to requiring real estate as collateral on new loans, including short-term operating loans.

We project outstanding real estate loans held by the FmHA to decline slightly in 1987 while the combined loan portfolio of life insurance companies may fall around 10 percent from the year earlier. Relative shares of total outstanding real estate debt held by these two groups would remain fairly constant from 1986 if these projections hold.

Loans held by all major agricultural lenders may have declined in 1987, adding to the abatement in farm debt in general and in nonreal estate debt in particular. Declining demand for current-year operating loans came from record direct Federal payments with large advances, an unparalled drop in 1986 production expenses with more relief forecast for 1987, and record levels of net income and cash flow. These factors have allowed many producers to get through the 1987 crop year without requiring credit to finance their operations and to retire a projected $14-$15 billion in outstanding obligations. The decline in farm debt occurred because: lenders were hesitant to extend new loans, producers took advantage of opportunities to retire current obligations, and lenders charged off nonperforming loans.

Slowing the rate of the decline in agricultural asset and debt reduction may lead to an increase in equity for the first time since 1980. Current projections call for farm sector equity to rise about 3 percent to the $550-$560 billion range. The aggregate debt/asset ratio could fall more than 2 percentage points. This improvement, if realized, would represent the largest 1-year change in relative indebtedness since 1942. The ratio of debt to equity may register a major improvement of 4-5 percentage points in 1987, the largest gain in the 1980's.

While national average income and financial indicators have shown major improvements in the past few years, widely varying situations prevail among farms with different major enterprises, sales levels, and locations. Poor export performance throughout much of the 1980's has contributed to large stocks of major program commodities which remain despite policy induced production cutbacks. Much of the recent improvement in income and financial indicators came from unprecedented declines in production expenses. Higher petroleum prices, rising interest rates, and/or policy changes that curtailed the amount of idled land could push expenses up.

Effects of Certificates in 1987

Generic certificates have had a significant effect on the domestic corn and wheat markets since the summer of 1986. USDA had issued a total of $11.9 billion worth of certificates through October 1987. Certificate exchanges totaled $9.2 billion during this period, with corn accounting for $6.8 billion and wheat $1.6 billion.

Certificates are estimated to have lowered farm prices for corn by 10-15 cents in 1986/87 to $1.50 a bushel. Certificate exchanges of 751 million bushels during December 1986-February 1987 lowered farm prices for corn by an estimated 10-20 cents from what they would have been otherwise (see table 14). In March-May, 1.64 billion bushels of corn were acquired with certificates, and farm prices dropped by 20-25 cents. Farm prices dropped an estimated 20-25 cents during June-August, with only 436 million bushels acquired. Certificate exchanges likely will have had an effect on farm prices in September-November of 1987 similar to the one in 1986.

Certificate exchanges lowered the 1986/87 average market price for wheat by an estimated 2-8 cents to $2.42 a bushel. Wheat prices could have been much higher during the March-May quarter had it not been for certificate exchanges. The market absorbed over 72 percent of the 161 million bushels of wheat exchanged from CCC inventories during 1986/87 in March-May. Combined with producer loan exchanges, the average quarterly farm price was lowered by an estimated 5-10 cents. Wheat exchanges totaled only 70 million bushels during June-August, and produced only a negligible effect on farm prices.

How certificates affect farm prices for wheat during September-November will have depended on supply and demand conditions for wheat and two other factors. First, wheat placements in 1987 are expected to be below a year earlier. Consequently, a relatively smaller share of wheat exchanges should come from loan positions.

Second, USDA announced in late October that all holders of certificates would be allowed to bid for up to 10 million bushels of wheat from CCC stocks each week starting in early November. During the first 2 weeks of the program, bids for about 18 million bushels of wheat were accepted. A greater share of wheat exchanges in the September-November quarter likely will come from CCC stocks because of the bidding program and relatively fewer exchanges by farmers. The certificate bidding program should free up more CCC-owned wheat than would have been exchanged otherwise, and, therefore, affect farm prices to a greater degree.

Tax Reform and Agriculture

The current administration's agricultural policy has been directed at allowing output to respond to price signals undistorted by Government intervention. Federal income tax code provisions that encouraged investment were often at odds with the goal of reducing agricultural surplus.

Tax Code Revisions

A 7-percent investment tax credit (ITC) was added to the tax code in 1962, repealed in 1969, restored in 1971, and increased to 10 percent in 1975. Until the mid-1970's, tax incentives to invest probably had less effect on agriculture than other sectors because taxable incomes were relatively lower for farm operators. However, as incomes inflated, tax considerations became more relevant to farmers.

The Economic Recovery Tax Act of 1981 introduced the Accelerated Cost Recovery System (ACRS) under which the cost of most farm equipment could be recovered in 5 rather than 10 years. Marginal tax rates were also lowered; the top rate dropped from 70 to 50 percent and the lowest rate from 14 to 11 percent. The Tax Equity and Fiscal Responsibility Act of 1982 altered property categories for ITC to match ACRS. The base of depreciable property was reduced by 50 percent of the tax credit. Section 179 allowed a limited amount (reduced from $7,500 to $5,000 for 1985) of purchased assets to be expensed (deducted as an annual production expense) rather than carried on a depreciation schedule.

The Tax Reform Act of 1986 (TRA) was the most sweeping revision of the tax code since 1954. The act was intended to be revenue neutral while broadening the tax base and lowering marginal rates. Elimination of some deductions, exclusions, and credits could simplify the tax filing process, while revised treatment of some production expenses could complicate recordkeeping. The interplay of all of the code revisions will determine their final effect on farm tax liabilities (fig. 23).

Allowable exclusions, deductions, and exemptions reduce taxable income, thus decreasing the tax base. The TRA eliminated deductions for two working spouses, State and local sales taxes, capital gain and dividend exclusions, and phased out the deduction for consumer interest. Lower levels of preproduction and prepaid expenses were allowed. The net effect of lower rates, longer recovery periods, and the half-year convention will most likely reduce annual depreciation deductions. Taxable income could be increased by not allowing income averaging or offsetting other income with passive farm losses. Three changes in the tax code decrease taxable income: doubling the limit on Section 179 expensing of capital purchases, increasing the standard deduction, and raising personal exemptions to almost $2,000 per dependent.

The TRA simplified the tax code rate structure by replacing 14 marginal rates with 2 marginal rates, 15 and 28 percent. A third effective marginal rate of 33 percent resulted from a temporary surcharge. The top marginal rate for individual and joint returns declined from 50 to 33 percent.

Prior to 1986, tax liabilities could be directly lowered by investment tax credits. The amount of ITC was 6 or 10 percent of capital purchases, less the amount expensed, and limited to the lesser of $25,000 or the tax liability. Excess ITC could be carried forward and back. A portion of credits on purchases made before 1986 could still be used after TRA.

Modeling Farm Tax Liabilities

A tax accounting model was developed to incorporate Federal income tax rates, deductions, exemptions, exclusions, and credits applicable to annual farm-level survey data. The 1986 FCRS represents 1.6 million farm operations and accounts for 90 percent of commercial-sized farms (annual sales of agricultural commodities of at least $40,000) and approximately 60 percent of smaller operations.

Federal income taxes, self-employment taxes, and employer contributions for employees' Social Security and unemployment were calculated. Earned income credit, alternate minimum tax provisions, and minimum contributions to the operator's Social Security account were imposed. Estimates of State income taxes were 5 percent of Federal adjusted gross income minus Federal income tax. Newly purchased depreciable assets were expensed before ITC or depreciation was computed. We allowed Section 179 deductions of capital expenditures to reduce net farm income to zero but not to create net losses.

Income averaging and carryovers of operating losses and investment credits were not simulated because FCRS data is not continuous over time. Prepaid and preproduction expenses could not be separated from current expenses with any certainty. Limited household information prevented use of itemized deductions, deducting IRA contributions, or making any other adjustments to off-farm income.

The effect of TRA on tax liabilities of unincorporated farm operations was simulated by estimating taxes under

Figure 23--Tax code revisions

Item	TEFRA of 1982	TRA of 1986
Preproduction expenses	Deducted for the tax year in which such expenses were paid.	Expenditures for animals and plants with a development period more than 2 years must be capitalized.
Passive losses and credits	One activity could offset income or taxes from other sources.	Activities in which taxpayers do not materially participate can not offset other income.
Cash accounting	Permitted deductions of expenses for tax year in which paid.	Cannot be used by nonfarm business, and farms may not deduct prepaid amounts in excess of 50 percent of total current expenses.
Land clearing	Expenditures could be immediately deducted.	Expenditures will be added to tax basis of property.
Long-term capital gains	Had 60 percent excluded from taxation.	Will be treated as ordinary income.
Recovery of depreciable asset costs	Period shortened to 5 years for most farm assets. $5,000 could be expensed annually, and 6-10 percent allowed as tax credit.	Was extended to 7 years for most farm assets. Expensing limit was raised to $10,000. No tax credit is available for investments made after 1985.
Nonbusiness deductions:		
Two working spouses	Was 10 percent of lower earnings.	Was repealed.
Sales tax	Could be itemized.	Not deductible.
Income averaging	Was allowed.	Was repealed.
Contributions to IRA's	Were fully deductible.	No longer deductible if joint adjusted gross income exceeds $40,000.
Dividend income	Excluded up to $200.	All taxable.
Personal exemption	Was $1,080 in 1986.	Will be $2,000 in 1989.
Standard deduction		
On joint return	Was $3,670 in 1986.	Will be $5,000 by 1988
On single return	Was $2,480 in 1986.	Will be $3,000 by 1988.
Corporate taxes		
Top marginal rate	Was 46 percent.	Lowered to 34 percent.
Individual taxes		
Top marginal rate	Was 50 percent.	Lowered to 33 percent.
Lowest rate	Was 11 percent.	Increased to 15 percent.

provisions of the code applicable in 1985 (pre-TRA) and under the code after complete implementation of reforms (post-TRA). Estimates were based on data from the 1986 FCRS, allowing no change in tax management behavior in response to changed tax laws.

Estimated Effect of TRA

Farm operations represented by the FCRS had total cash receipts of almost $102 billion and income from nonfarm sources of approximately $38 billion in 1986. Off-farm income was added to net income from the farm business to arrive at gross income before adjustments. Total adjusted gross income (AGI) was $49 billion under pre-TRA provisions. AGI was 8.5 percent larger, $53 billion after reform was fully implemented. Decreased depreciation deductions ($429 million less) and absence of capital gain exclusions ($5.2 billion) raised post-TRA AGI, while increased deductions for expensing capital purchases under Section 179 ($780 million) reduced the tax base.

Lower marginal tax rates had more effect than both the higher AGI and loss of $510 million ITC. Total estimated Federal income tax was 25 percent of AGI before tax reform and less than 19 percent after reform. Federal income tax liabilities of farm operators declined $2.5 billion, approximately 20 percent, after TRA revisions were fully implemented.

All four sizes of operations (table 42) had higher average AGI after tax reform than before. Increases of State taxes ranged from almost 7 percent for the smallest to 39 percent for the largest operations. The Federal income tax decreased 19-20 percent for farms with sales under $250,000 and about 25 percent for the largest category.

The average capital gain exclusion varied with the types of major enterprises (table 43). Farm types were determined by the enterprise which contributed the most to production value during 1986. The presence of other enterprises in the farm operation could have influenced estimated tax items. Corn-soybean farms would have had an average $1,400 more taxable income as a result of eliminating capital gains exclusions. Depreciation deductions declined $253 while expensing increased $678, post-TRA. Changes of tax items interacted with TRA's marginal rates to reduce effective

Table 42--Taxes estimated from the 1986 Farm Costs and Returns Survey, before and after the Tax Reform Act of 1986, by size of farm 1/

Item	Values of production			
	Less than $5,000		$5,000 to $39,999	
	Pre-TRA	Post-TRA	Pre-TRA	Post-TRA
	Dollars per farm			
Cash receipts	2,204	2,204	13,284	13,284
Off-farm income	24,083	24,083	27,973	27,973
Adjusted gross income	22,547	22,978	25,541	26,516
Federal income tax	3,800	3,059	5,098	4,116
State income tax	937	996	1,022	1,120
Self-employment tax	121	121	338	338
FICA and FUTA	3	3	26	26
Total taxes 2/	4,861	4,179	6,484	5,600
Section 179 expenses	34	34	374	473
Depreciation	652	599	1,754	1,597
Capital gain exclusion	299	n/a	905	n/a
Investment tax credit	83	n/a	199	n/a
	$40,000 to $249,999		More than $250,000	
	Pre-TRA	Post-TRA	Pre-TRA	Post-TRA
	Dollars per farm			
Cash receipts	98,041	98,041	587,746	587,746
Off-farm income	21,064	21,064	26,372	26,372
Adjusted gross income	34,180	37,515	122,753	139,366
Federal income tax	8,864	7,119	48,886	36,604
State income tax	1,266	1,520	3,693	5,138
Self-employment tax	1,412	1,343	2,372	2,338
FICA and FUTA	343	343	6,121	6,121
Total taxes 2/	11,885	10,325	61,172	50,201
Section 179 expenses	1,791	2,873	2,377	4,202
Depreciation	4,720	4,328	13,159	11,764
Capital gain exclusion	4,627	n/a	20,731	n/a
Investment tax credit	432	n/a	1,796	n/a

n/a=not applicable.

1/ All estimates were based on the 1986 survey of farm operators. Post-TRA estimates were based on the tax code expected to be in effect by 1988. 2/ Total taxes included Federal and State income taxes, self-employment social security tax, and employer's share of FICA and FUTA.

average income tax rates (Federal income tax divided by AGI) to 18 percent from 24 percent for corn and soybean farms.

The average effective rate fell from 27 percent to 19 percent for farms with hog feeding operations. Farrow-to-finish hogs had a slight reduction of average rates, from 19 to 16 percent. However, estimated tax liability increased. AGI increased over $6,000 on average, influenced by the loss of an average $7,000 capital gains exclusion by operations with breeding swine.

Before tax reform, dairy farms averaged a $7,333 capital gains exclusion. However, estimated Federal income tax increased only slightly without the exclusion and other TRA changes. The average effective tax rate still decreased from about 20 percent to 16 percent, because AGI increased relatively more than income taxes for operations with dairy enterprises.

Taxing capital gains as ordinary income also prevented cow-calf operations from benefiting as much as feeder cattle from TRA. Operations with feeder cattle had average effective rates decline from 33 percent to 20 percent, and cow-calf rates from 20 percent to 16 percent.

Changes in total taxes resulting from implementation of TRA for farm types of different sizes (table 44) illustrate that tax effects can be quite diverse. The TRA had the greatest effect on beef feeding operations with sales between $40,000 and $250,000. Average estimated total taxes (Federal income tax, State income tax, self-employment tax, and employer's contributions) declined over 30 percent when fully implemented TRA provisions were applied to 1986 income and expense data.

Total taxes of commercial farms with breeding livestock increased after tax reform. Farrow-to-finish hog operations with sales less than $250,000 had a 15-percent average tax increase after the TRA. Total tax estimates increased 7 percent for the largest cow-calf farms or ranches and 4 percent for dairy farms.

Differential effects of TRA on operations with breeding livestock may be more pronounced than the estimates indicate. Capitalization of preproduction expenditures may raise AGI

Table 43--Taxes estimated from the 1986 Farm Costs and Returns Survey, before and after the Tax Reform Act of 1986, by type of farm 1/

Item	Major enterprises					
	Corn-soybean		Farrow-to-finish hog		Feeder hogs	
	Pre-TRA	Post-TRA	Pre-TRA	Post-TRA	Pre-TRA	Post-TRA
	Dollars per farm					
Cash receipts	70,393	70,393	93,727	93,727	92,012	92,012
Off-farm income	21,531	21,531	16,115	16,115	26,947	26,947
Adjusted gross income	32,840	33,763	28,935	35,153	39,275	40,199
Federal income tax	7,980	6,181	5,593	5,730	10,780	7,877
State income tax	1,243	1,378	1,167	1,471	1,425	1,616
Self-employment tax	1,074	1,040	1,066	1,013	1,026	987
FICA and FUTA	152	152	192	192	119	119
Total taxes 2/	10,450	8,752	8,018	8,407	13,349	10,599
Section 179 expenses	1,219	1,897	1,380	2,150	1,544	2,534
Depreciation	4,286	4,052	3,131	2,750	3,310	2,587
Capital gain exclusion	1,397	n/a	7,158	n/a	1,082	n/a
Investment tax credit	283	n/a	376	n/a	618	n/a
	Dairy		Beef, cow-calf		Beef, feeding	
	Pre-TRA	Post-TRA	Pre-TRA	Post-TRA	Pre-TRA	Post-TRA
	Dollars per farm					
Cash receipts	120,117	120,117	28,653	28,653	95,384	95,384
Off-farm income	8,093	8,093	27,382	27,382	35,412	35,412
Adjusted gross income	23,817	29,621	26,457	30,412	30,934	37,485
Federal income tax	4,701	4,747	5,772	5,123	10,338	7,622
State income tax	956	1,244	1,035	1,164	1,330	1,493
Self-employment tax	1,231	1,141	324	317	584	555
FICA and FUTA	484	484	112	112	231	231
Total taxes 2/	7,371	7,618	7,243	6,817	12,483	9,901
Section 179 expenses	2,107	3,346	289	391	783	1,229
Depreciation	4,617	4,126	1,978	1,802	2,866	2,600
Capital gain exclusion	7,333	n/a	4,556	n/a	844	n/a
Investment tax credit	569	n/a	218	n/a	583	n/a

n/a=not applicable.

1/ All estimates were based on the 1986 survey of farm operators. Post-TRA estimates were based on the tax code expected to be in effect by 1988. 2/ Total taxes included Federal and State income taxes, self-employment social security tax, and employer's share of FICA and FUTA.

above estimated levels. If breeding livestock was the major source of business activity, taxing capital gains as ordinary income and capitalizing preproduction expenses would raise taxes more than was shown here. TRA may have unique effects on taxes of orchard and nursery operators that cannot be derived from FCRS data.

Table 44--Total tax liabilities before and after the Tax Reform Act

Major enterprise	Values of production					
	Less than $5,000			$5,000 to $39,999		
	Pre-TRA	Post-TRA	Change	Pre-TRA	Post-TRA	Change
	Dollars per farm		Percent	Dollars per farm		Percent
Small grain 1/	4,891	4,339	-11.3	5,707	4,988	-12.6
Corn-soybean	3,793	3,299	-13.0	5,647	4,893	-11.6
Beef, cow-calf	4,255	3,784	-11.1	5,741	5,234	-8.8
Beef, feeding	3,692	3,357	-9.1	10,354	8,339	-19.5
Dairy	*	*	*	1,568	1,517	-3.2
Hog, farrow-finish	3,452	2,882	-16.5	4,305	4,091	-5.0
Hog, feeding	3,615	3,124	-13.6	4,820	4,143	-14.1
	$40,000 to $249,999			More than $250,000		
	Pre-TRA	Post-TRA	Change	Pre-TRA	Post-TRA	Change
	Dollars per farm		Percent	Dollars per farm		Percent
Small grain 1/	13,576	11,462	-15.6	35,207	30,008	-14.8
Corn-soybean	13,056	10,749	-17.7	37,493	30,646	-18.3
Cotton-rice	20,528	16,115	-21.5	84,342	62,146	-26.3
Beef, cow-calf	13,208	12,746	-3.5	58,883	63,021	7.0
Beef, feeding	12,885	9,869	-30.6	34,314	27,029	-21.2
Dairy	6,083	6,294	3.5	35,423	36,832	4.0
Hog, farrow-finish	6,927	7,962	14.9	41,618	42,028	1.0
Hog, feeding	8,410	7,761	-7.7	74,461	55,197	-25.9

*=insufficient number of farms.
1/ Major enterprises of small grain farms were wheat, oats, and barley.

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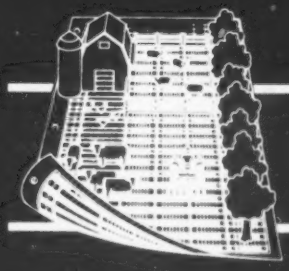

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